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**Coupled Rotor/Airframe  
Vibration Analysis Program  
Manual - Volume II  
Sample Input and Output Listings**

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## TABLE OF CONTENTS

### Volume II - Sample Input and Output Listings

	<u>PAGE</u>
SUMMARY	1
TABLE 1. Description of Check Cases	2
APPENDIX A: Base Program Test Case	5
B: Base Program Test Case	7
C: Base Program Test Case	11
D: Base Program Test Case	12
E: Base Program Test Case	13
F: G400/F389 Sample Input	150
G: G400/F389 Sample Output	164
H: E927 Sample Input	229
I: E927 Sample Output	238
J: Check Cases for External Programs	258
REFERENCE	260





### SUMMARY\*

This report provides sample input and output listings obtained with the Base Program (SIMVIB) of the Coupled Rotor/Airframe Vibration Analysis and the external programs, G400/F389 and E927. Results for five of the Base Program test cases discussed in Table 13 of Reference 1 are shown in Appendices A through E. They represent different applications of the SIMVIB program to study the vibration characteristics of various dynamic configurations. Input and output listings obtained for one cycle of the G400/F389 coupled program are presented in Appendices F and G respectively. Similarly, results from the rotor aeroelastic analysis E927 appear in Appendices H and I. A brief description of the check cases is provided in Table 1. Finally, a summary of the check cases for all the external programs interacting with the SIMVIB program is illustrated in Appendix J.

\*The research effort which led to the results of this report was financially supported by the Structures Laboratory, USARTL, (AVRADCOM).

TABLE 1. DESCRIPTION OF CHECK CASES

APPENDIX	EXTERNAL PROGRAM	CHECK CASE NUMBER *	CHECK CASE DESCRIPTION
A	SIMVIB	5	Time history response of a fixed system absorber mounted on an airframe.
B	SIMVIB	7	Forced response of one d.o.f. (vertical motion) nodal isolator mounted on an airframe.
C	SIMVIB	11	Forced response of six d.o.f. nodal isolator assembled from four isolator bars positioned 90° to each other.
D	SIMVIB	12	Eigensolution of a rotor/airframe dynamic system with the rotor matrices calculated from the E927 program.
E	SIMVIB	13	Forced response of a rotor/airframe dynamic system using a rotor impedance representation similar to that of the G400 program.
F&G	G400/F389	14,15,16	Coupled G400/F389 program operation for one cycle for a rotor blade with flapping, lead-lag and one elastic flatwise d.o.f.
H&I	E927	12	Rotor matrices for a rotor blade in hover with flapping, lead-lag and two elastic bending modes and five hub d.o.f.
*Refers to the Base Program check cases discussed in Reference 1, Table 13.			

APPENDIX A. BASE PROGRAM TEST CASE 5

```
*****  
* SIMVIB PROGRAM *  
* INPUT AND INTERNAL CALCULATIONS *  
* EMPLOY STANDARD UNITS *  
* (FOOT, POUND, SECOND) *  
*****
```

```
SIMVIB CHECK CASE 5 FOR CDC COMPUTER  
FIXED ABSORBER TIME HISTORY RESPONSE  
1 MODE SHAPE - FX FORCE (COS & SIN)  
TIME (SEC)
```

# INPUT DECK CARD IMAGE LISTING

\*\*\*\*\*

4	FA1	1	0		0006000
	1 /	1.000D+00	0.0	0.0	/* CONNECTION NODE NUMBER */ 0007000
	2 /	1.000D+01	0.0	0.0	/* MASS */ 0008000
	3 /	1.200D-01	0.0	0.0	/* DAMPING RATIO */ 0009000
	4 /	2.500D+04	0.0	0.0	/* SPRING STIFFNESS */ 0010000
	5 /	1.000D+00	1.000D+00	1.000D+00	/* MOMENTS OF INERTIA */ 0011000
	8 /	0.0	0.0	0.0	/* EULER ANGLES */ 0012000
	-11 /	1.000D-02	2.000D-02	0.0	/* INITIAL VALUES */ 0013000

	GF1	2	0		0015000
	1 /	1.000D+00	0.0	0.0	/* CONNECTION NODE NUMBER */ 0016000
	2 /	0.0	0.0	0.0	/* EULER ANGLES */ 0017000
	5 /	1.500D+03	4.000D+02	0.0	/* X FORCE - COS , SINE */ 0018000
	7 /	0.0	0.0	0.0	/* Y FORCE - COS , SINE */ 0019000
	9 /	0.0	0.0	0.0	/* Z FORCE - COS , SINE */ 0020000
	11 /	0.0	0.0	0.0	/* THETA1 FORCE - COS , SINE */ 0021000
	13 /	0.0	0.0	0.0	/* THETA2 FORCE - COS , SINE */ 0022000
	-15 /	0.0	0.0	0.0	/* THETA3 FORCE - COS , SINE */ 0023000

	TH1	3	0		0025000
	1 /	2.500D-01	0.0	0.0	/* NEWMARK BETA FACTOR */ 0026000
	2 /	1.000D-02	0.0	0.0	/* TIME INCREMENT SEC */ 0027000
	3 /	1.000D+00	0.0	0.0	/* MAX TIME SEC */ 0028000
	4 /	6.000D+00	0.0	0.0	/* FORCING FREQUENCY HZ */ 0029000
	5 /	0.0	0.0	0.0	/* DEBUG SELECTOR */ 0030000
	-6 /	0.0	0.0	0.0	/* RESTART FLAG */ 0031000

	MS1	4	0		/* MODAL STRUCTURE TYPE1 */ 0033000
	1 /	0.0	0.0	0.0	/* DAMPING RATIO */ 0034000
	2 /	1.000D+00	0.0	0.0	/* GENER. MASS LB-SEC**2/IN */ 0035000
	3 /	0.0	0.0	0.0	/* MODAL FREQUENCY HZ */ 0036000
	4 /	1.000D+00	0.0	0.0	/* NUMBER OF NODES */ 0037000
	5 /	1.000D+00	0.0	0.0	/* NODE NUMBERS */ 0038000
	10 /	1.000D+00	0.0	0.0	/* MODE SHAPE */ 0039000
	13 /	0.0	0.0	0.0	/* MODE SHAPE */ 0040000
	40 /	0.0	0.0	0.0	/* EULER ANGLES */ 0041000
	-56 /	2.000D-02	0.0	0.0	/* INITIAL VALUES */ 0042000

	GEN	5	0		/* GENERAL ELEMENT */ 0048000
	1 /	0.0	0.0	0.0	/* SUPPRESS FINAL RESULTS */ 0049000
	2 /	1.000D+00	0.0	0.0	/* DO NOT SUPPRESS INPUT LISTS */ 0050000
	-10 /	1.200D-01	0.0	0.0	/* VALUE FOR 3-D PLOTS- DAMP. */ 0050100
	STOP				

COMPONENT:FIXABS1

\*\*\*\*\* FIXED SYSTEM ABSORBER TYPE 1 \*\*\*\*\*

ELEMENT:

1

1	NCN	CONNECTION NODE NUMBER (ND)	1
2	M0	ABSORBER MASS (SLUGS)	1.00000D+01
3	ZETA	ABSORBER DAMPING RATIO (ND)	1.20000D-01
4	K0	ABSORBER STIFFNESS (LB/FT)	2.50000D+04
5	IXX	ABSORBER SECOND MASS MOMENT OF INERTIA ABOUT THE X AXIS (SLUG-FT**2)	1.00000D+00
6	IYY	ABSORBER SECOND MASS MOMENT OF INERTIA ABOUT THE Y AXIS (SLUG-FT**2)	1.00000D+00
7	IZZ	ABSORBER SECOND MASS MOMENT OF INERTIA ABOUT THE Z AXIS (SLUG-FT**2)	1.00000D+00
8	THETA	EULER PITCH ANGLE (DEGREES) - ROTATE SECOND ABOUT THE Y-AXIS	0.0
9	PHI	EULER ROLL ANGLE (DEGREES) - ROTATE THIRD ABOUT THE X-AXIS	0.0
10	XSI	EULER YAW ANGLE (DEGREES) - ROTATE FIRST ABOUT THE Z-AXIS	0.0
11	DELTA	ABSORBER MASS INITIAL DISPLACEMENT (FT)	1.00000D-02
12	DDELTA	ABSORBER MASS INITIAL VELOCITY (FT/SEC)	2.00000D-02

COMPONENT:GENFOR1

\*\*\*\*\* GENERALIZED FORCE TYPE 1 (USED WITH FORCER1) \*\*\*\*\*

ELEMENT: 2

1 NCN CONNECTION NODE NUMBER (ND)

1

2 THETA EULER PITCH ANGLE (DEGREES) - ROTATE SECOND ABOUT THE Y-AXIS

0.0

3 PHI EULER ROLL ANGLE (DEGREES) - ROTATE THIRD ABOUT THE X-AXIS

0.0

4 XSI EULER YAW ANGLE (DEGREES) - ROTATE FIRST ABOUT THE Z-AXIS

0.0

5 FXCOS COSINE COMPONENT OF X DIRECTION FORCE (LB)

1.50000D+03

6 FXSIN SINE COMPONENT OF X DIRECTION FORCE (LB)

4.00000D+02

7 FYCOS COSINE COMPONENT OF Y DIRECTION FORCE (LB)

0.0

8 FYSIN SINE COMPONENT OF Y DIRECTION FORCE (LB)

0.0

9 FZCOS COSINE COMPONENT OF Z DIRECTION FORCE (LB)

0.0

10 FZSIN SINE COMPONENT OF Z DIRECTION FORCE (LB)

0.0

11 FT1COS COSINE COMPONENT OF THETA 1 MOMENT (LB)

0.0

12 FT1SIN SINE COMPONENT OF THETA 1 MOMENT (IN-LB)

0.0

13 FT2COS COSINE COMPONENT OF THETA 2 MOMENT (IN-LB)

0.0

14 FT2SIN SINE COMPONENT OF THETA 2 MOMENT (IN-LB)

0.0

15 FT3COS COSINE COMPONENT OF THETA 3 MOMENT (IN-LB)

0.0

16 FT3SIN SINE COMPONENT OF THETA 3 MOMENT (IN-LB)

0.0

17 IHRESP HHC FLAG

0

= 0 HHC NOT ACTIVE

= 1 HHC ACTIVE

18 WZX WEIGHT FOR X RESPONSE

0.0

19 WZY WEIGHT FOR Y RESPONSE

0.0

20 WZZ WEIGHT FOR Z RESPONSE

0.0

21 WZX WEIGHT FOR THETA1 RESPONSE

0.0

22 WZY WEIGHT FOR THETA2 RESPONSE

0.0

23 WZWZ WEIGHT FOR THETA3 RESPONSE

0.0

COMPONENT:TIMEHIS1

\*\*\*\*\* NEWMARK INTEGRATION METHOD \*\*\*\*\*

ELEMENT: 3

1 BETN NEWMARK BETA FACTOR, RANGE PERMITTED = 0.0 TO 0.25

2.50000D-01

2 DELT TIME INCREMENT (SECONDS)

1.00000D-02

3 THAX TIME LIMIT FOR INTEGRATION OF EQUATIONS OF MOTION (SEC)

1.00000D+00

4 OMEGA FORCING FREQUENCY (HERTZ)

6.00000D+00

5 IDEBUG DEBUG SELECTOR

0

= 0 ==&gt; NO DEBUG PRINTOUT

= 1 ==&gt; TRACE MATRIX ASSEMBLY AND SOLUTION

6 IRSTRT RESTART FLAG

0

= 0 ==&gt; NO RESTART

= 1 ==&gt; RESTART

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

4

1 ZETA DAMPING RATIO (ND) 0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 1.00000D+00

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1		1.0000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2		0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3		0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4		0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5		0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

			THETA	PHI	XSI
40 - 42	NODE 1		0.0	0.0	0.0
43 - 45	NODE 2		0.0	0.0	0.0
46 - 48	NODE 3		0.0	0.0	0.0
49 - 51	NODE 4		0.0	0.0	0.0
52 - 54	NODE 5		0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 2.00000D-02

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0



COMPONENT: GENINPUT

\*\*\*\*\* GENERAL INPUT FOR PROGRAM CONTROL \*\*\*\*\*

ELEMENT: 5

1 ICHTL1 PRINT SELECTOR FOR FINAL RESULTS

= 0 ==&gt; SUPPRESS LINE PRINTER OUTPUT

= 1 ==&gt; FULL LINE PRINTER OUTPUT

2 ICHTL2 PRINT SELECTOR FOR COMPONENT INPUTS

= 0 ==&gt; SUPPRESS LINE PRINTER OUTPUT

= 1 ==&gt; FULL LINE PRINTER OUTPUT

3-9 ----- OPEN LOCATIONS FOR FUTURE USE

10 XINDEP INDEPENDENT VARIABLE FOR 3-D PLOTS

1.200000-01

\*\*\* WARNING ERROR (IER = 34) FROM IMSL ROUTINE LUDATF

\*\*\* WARNING ERROR (IER = 34) FROM IMSL ROUTINE LEQT2F

## NUMBER

## OUTPUT COORDINATES

## VALUE

1	ELEMENT			TIME	SEC	0.0
2	ELEMENT	1	FA1	DELT	DISPMENT	1.00000-02
3	ELEMENT	1	FA1	X	DISPMENT	2.00000-02
4	ELEMENT	1	FA1	Y	DISPMENT	0.0
5	ELEMENT	1	FA1	Z	DISPMENT	0.0
6	ELEMENT	1	FA1	THTX	DISPMENT	0.0
7	ELEMENT	1	FA1	THTY	DISPMENT	0.0
8	ELEMENT	1	FA1	THTZ	DISPMENT	0.0
9	ELEMENT	2	GF1	X	DISPMENT	2.00000-02
10	ELEMENT	2	GF1	Y	DISPMENT	0.0
11	ELEMENT	2	GF1	Z	DISPMENT	0.0
12	ELEMENT	2	GF1	THTX	DISPMENT	0.0
13	ELEMENT	2	GF1	THTY	DISPMENT	0.0
14	ELEMENT	2	GF1	THTZ	DISPMENT	0.0
15	ELEMENT	4	MS1	MODE	DISPMENT	2.00000-02

## \*\*\*\*\* STATISTICS \*\*\*\*\*

FINAL SIZE OF WORKING STORAGE (MAXSIZ) IS 1032 WORDS.

10 SIMVIB CHECK CASE 5 FOR CDC COMPUTER  
FIXED ABSORBER TIME HISTORY RESPONSE  
1 MODE SHAPE - FX FORCE (COS & SIN)  
TIME (SEC)

101.1 15.1 0.1200

1.1 TIMESEC  
2.1 1FA1 DELTDISPMENT  
3.1 1FA1 X DISPMENT  
4.1 1FA1 Y DISPMENT  
5.1 1FA1 Z DISPMENT  
6.1 1FA1 THTXDISPMENT  
7.1 1FA1 THTYDISPMENT  
8.1 1FA1 THTZDISPMENT  
9.1 2GF1 X DISPMENT  
10.1 2GF1 Y DISPMENT  
11.1 2GF1 Z DISPMENT  
12.1 2GF1 THTXDISPMENT  
13.1 2GF1 THTYDISPMENT  
14.1 2GF1 THTZDISPMENT  
15.1 4MS1 MOEDEDISPMENT

NOTE: THE LINE PRINTER OUTPUT DISPLAYED  
HERE IS AN ECHO OF THE DATA  
WRITTEN TO UNIT 2 FOR PLOTTING  
(SEE REF.1, FIGURE 45)  
TIME = 0 TO 1 SECOND

1.1	0.0	0.0	0.0	0.0
0.0	1.0000D-02	2.0000D-02	0.0	0.0
0.0	0.0	0.0	2.0000D-02	0.0
0.0	0.0	0.0	0.0	2.0000D-02
2.1	1.0000D-02			
1.0000D-02	1.1826D-02	2.4895D-02	0.0	0.0
0.0	0.0	0.0	2.4895D-02	0.0
0.0	0.0	0.0	0.0	2.4895D-02
3.1	2.0000D-02			
2.0000D-02	1.7906D-02	3.9094D-02	0.0	0.0
0.0	0.0	0.0	3.9094D-02	0.0
0.0	0.0	0.0	0.0	3.9094D-02
4.1	3.0000D-02			
3.0000D-02	3.0247D-02	5.9470D-02	0.0	0.0
0.0	0.0	0.0	5.9470D-02	0.0
0.0	0.0	0.0	0.0	5.9470D-02
5.1	4.0000D-02			
4.0000D-02	5.0176D-02	8.1861D-02	0.0	0.0
0.0	0.0	0.0	8.1861D-02	0.0
0.0	0.0	0.0	0.0	8.1861D-02
6.1	5.0000D-02			
5.0000D-02	7.7225D-02	1.0243D-01	0.0	0.0
0.0	0.0	0.0	1.0243D-01	0.0
0.0	0.0	0.0	0.0	1.0243D-01
7.1	6.0000D-02			
6.0000D-02	1.0872D-01	1.1860D-01	0.0	0.0
0.0	0.0	0.0	1.1860D-01	0.0
0.0	0.0	0.0	0.0	1.1860D-01
8.1	7.0000D-02			
7.0000D-02	1.4018D-01	1.2940D-01	0.0	0.0
0.0	0.0	0.0	1.2940D-01	0.0
0.0	0.0	0.0	0.0	1.2940D-01
9.1	8.0000D-02			
8.0000D-02	1.6649D-01	1.3515D-01	0.0	0.0
0.0	0.0	0.0	1.3515D-01	0.0
0.0	0.0	0.0	0.0	1.3515D-01
10.1	9.0000D-02			
9.0000D-02	1.8318D-01	1.3692D-01	0.0	0.0
0.0	0.0	0.0	1.3692D-01	0.0
0.0	0.0	0.0	0.0	1.3692D-01

11.1	1.0000D-01				
1.0000D-01	1.8768D-01	1.3593D-01	0.0	0.0	
0.0	0.0	0.0	1.3593D-01	0.0	
0.0	0.0	0.0	0.0	1.3593D-01	
12.1	1.1000D-01				
1.1000D-01	1.7986D-01	1.3312D-01	0.0	0.0	
0.0	0.0	0.0	1.3312D-01	0.0	
0.0	0.0	0.0	0.0	1.3312D-01	
13.1	1.2000D-01				
1.2000D-01	1.6204D-01	1.2914D-01	0.0	0.0	
0.0	0.0	0.0	1.2914D-01	0.0	
0.0	0.0	0.0	0.0	1.2914D-01	
14.1	1.3000D-01				
1.3000D-01	1.3830D-01	1.2447D-01	0.0	0.0	
0.0	0.0	0.0	1.2447D-01	0.0	
0.0	0.0	0.0	0.0	1.2447D-01	
15.1	1.4000D-01				
1.4000D-01	1.1351D-01	1.1975D-01	0.0	0.0	
0.0	0.0	0.0	1.1975D-01	0.0	
0.0	0.0	0.0	0.0	1.1975D-01	
16.1	1.5000D-01				
1.5000D-01	9.2346D-02	1.1588D-01	0.0	0.0	
0.0	0.0	0.0	1.1588D-01	0.0	
0.0	0.0	0.0	0.0	1.1588D-01	
17.1	1.6000D-01				
1.6000D-01	7.8500D-02	1.1407D-01	0.0	0.0	
0.0	0.0	0.0	1.1407D-01	0.0	
0.0	0.0	0.0	0.0	1.1407D-01	
18.1	1.7000D-01				
1.7000D-01	7.4224D-02	1.1557D-01	0.0	0.0	
0.0	0.0	0.0	1.1557D-01	0.0	
0.0	0.0	0.0	0.0	1.1557D-01	
19.1	1.8000D-01				
1.8000D-01	8.0237D-02	1.2131D-01	0.0	0.0	
0.0	0.0	0.0	1.2131D-01	0.0	
0.0	0.0	0.0	0.0	1.2131D-01	
20.1	1.9000D-01				
1.9000D-01	9.5864D-02	1.3160D-01	0.0	0.0	
0.0	0.0	0.0	1.3160D-01	0.0	
0.0	0.0	0.0	0.0	1.3160D-01	
21.1	2.0000D-01				
2.0000D-01	1.1932D-01	1.4590D-01	0.0	0.0	
0.0	0.0	0.0	1.4590D-01	0.0	
0.0	0.0	0.0	0.0	1.4590D-01	
22.1	2.1000D-01				
2.1000D-01	1.4801D-01	1.6288D-01	0.0	0.0	
0.0	0.0	0.0	1.6288D-01	0.0	
0.0	0.0	0.0	0.0	1.6288D-01	
23.1	2.2000D-01				
2.2000D-01	1.7883D-01	1.8061D-01	0.0	0.0	
0.0	0.0	0.0	1.8061D-01	0.0	
0.0	0.0	0.0	0.0	1.8061D-01	
24.1	2.3000D-01				
2.3000D-01	2.0851D-01	1.9699D-01	0.0	0.0	
0.0	0.0	0.0	1.9699D-01	0.0	
0.0	0.0	0.0	0.0	1.9699D-01	
25.1	2.4000D-01				
2.4000D-01	2.3385D-01	2.1016D-01	0.0	0.0	
0.0	0.0	0.0	2.1016D-01	0.0	
0.0	0.0	0.0	0.0	2.1016D-01	

26.1	2.50000-01				
2.50000-01	2.52120-01	2.18830-01	0.0	0.0	
0.0	0.0	0.0	2.18830-01	0.0	
0.0	0.0	0.0	0.0	2.18830-01	
27.1	2.60000-01				
2.60000-01	2.61400-01	2.22480-01	0.0	0.0	
0.0	0.0	0.0	2.22480-01	0.0	
0.0	0.0	0.0	0.0	2.22480-01	
28.1	2.70000-01				
2.70000-01	2.60900-01	2.21440-01	0.0	0.0	
0.0	0.0	0.0	2.21440-01	0.0	
0.0	0.0	0.0	0.0	2.21440-01	
29.1	2.80000-01				
2.80000-01	2.51150-01	2.16710-01	0.0	0.0	
0.0	0.0	0.0	2.16710-01	0.0	
0.0	0.0	0.0	0.0	2.16710-01	
30.1	2.90000-01				
2.90000-01	2.34030-01	2.09790-01	0.0	0.0	
0.0	0.0	0.0	2.09790-01	0.0	
0.0	0.0	0.0	0.0	2.09790-01	
31.1	3.00000-01				
3.00000-01	2.12550-01	2.02390-01	0.0	0.0	
0.0	0.0	0.0	2.02390-01	0.0	
0.0	0.0	0.0	0.0	2.02390-01	
32.1	3.10000-01				
3.10000-01	1.90440-01	1.96200-01	0.0	0.0	
0.0	0.0	0.0	1.96200-01	0.0	
0.0	0.0	0.0	0.0	1.96200-01	
33.1	3.20000-01				
3.20000-01	1.71610-01	1.92680-01	0.0	0.0	
0.0	0.0	0.0	1.92680-01	0.0	
0.0	0.0	0.0	0.0	1.92680-01	
34.1	3.30000-01				
3.30000-01	1.59520-01	1.92900-01	0.0	0.0	
0.0	0.0	0.0	1.92900-01	0.0	
0.0	0.0	0.0	0.0	1.92900-01	
35.1	3.40000-01				
3.40000-01	1.56640-01	1.97410-01	0.0	0.0	
0.0	0.0	0.0	1.97410-01	0.0	
0.0	0.0	0.0	0.0	1.97410-01	
36.1	3.50000-01				
3.50000-01	1.64110-01	2.06250-01	0.0	0.0	
0.0	0.0	0.0	2.06250-01	0.0	
0.0	0.0	0.0	0.0	2.06250-01	
37.1	3.60000-01				
3.60000-01	1.81520-01	2.18870-01	0.0	0.0	
0.0	0.0	0.0	2.18870-01	0.0	
0.0	0.0	0.0	0.0	2.18870-01	
38.1	3.70000-01				
3.70000-01	2.07040-01	2.34240-01	0.0	0.0	
0.0	0.0	0.0	2.34240-01	0.0	
0.0	0.0	0.0	0.0	2.34240-01	
39.1	3.80000-01				
3.80000-01	2.37680-01	2.50970-01	0.0	0.0	
0.0	0.0	0.0	2.50970-01	0.0	
0.0	0.0	0.0	0.0	2.50970-01	
40.1	3.90000-01				
3.90000-01	2.69760-01	2.67430-01	0.0	0.0	
0.0	0.0	0.0	2.67430-01	0.0	
0.0	0.0	0.0	0.0	2.67430-01	

41.1	4.0000D-01			
4.0000D-01	2.9945D-01	2.8199D-01	0.0	0.0
0.0	0.0	0.0	2.8199D-01	0.0
0.0	0.0	0.0	0.0	2.8199D-01
42.1	4.1000D-01			
4.1000D-01	3.2327D-01	2.9329D-01	0.0	0.0
0.0	0.0	0.0	2.9329D-01	0.0
0.0	0.0	0.0	0.0	2.9329D-01
43.1	4.2000D-01			
4.2000D-01	3.3862D-01	3.0038D-01	0.0	0.0
0.0	0.0	0.0	3.0038D-01	0.0
0.0	0.0	0.0	0.0	3.0038D-01
44.1	4.3000D-01			
4.3000D-01	3.4407D-01	3.0289D-01	0.0	0.0
0.0	0.0	0.0	3.0289D-01	0.0
0.0	0.0	0.0	0.0	3.0289D-01
45.1	4.4000D-01			
4.4000D-01	3.3957D-01	3.0114D-01	0.0	0.0
0.0	0.0	0.0	3.0114D-01	0.0
0.0	0.0	0.0	0.0	3.0114D-01
46.1	4.5000D-01			
4.5000D-01	3.2644D-01	2.9604D-01	0.0	0.0
0.0	0.0	0.0	2.9604D-01	0.0
0.0	0.0	0.0	0.0	2.9604D-01
47.1	4.6000D-01			
4.6000D-01	3.0718D-01	2.8901D-01	0.0	0.0
0.0	0.0	0.0	2.8901D-01	0.0
0.0	0.0	0.0	0.0	2.8901D-01
48.1	4.7000D-01			
4.7000D-01	2.8517D-01	2.8175D-01	0.0	0.0
0.0	0.0	0.0	2.8175D-01	0.0
0.0	0.0	0.0	0.0	2.8175D-01
49.1	4.8000D-01			
4.8000D-01	2.6413D-01	2.7597D-01	0.0	0.0
0.0	0.0	0.0	2.7597D-01	0.0
0.0	0.0	0.0	0.0	2.7597D-01
50.1	4.9000D-01			
4.9000D-01	2.4768D-01	2.7320D-01	0.0	0.0
0.0	0.0	0.0	2.7320D-01	0.0
0.0	0.0	0.0	0.0	2.7320D-01
51.1	5.0000D-01			
5.0000D-01	2.3883D-01	2.7449D-01	0.0	0.0
0.0	0.0	0.0	2.7449D-01	0.0
0.0	0.0	0.0	0.0	2.7449D-01
52.1	5.1000D-01			
5.1000D-01	2.3950D-01	2.8035D-01	0.0	0.0
0.0	0.0	0.0	2.8035D-01	0.0
0.0	0.0	0.0	0.0	2.8035D-01
53.1	5.2000D-01			
5.2000D-01	2.5030D-01	2.9061D-01	0.0	0.0
0.0	0.0	0.0	2.9061D-01	0.0
0.0	0.0	0.0	0.0	2.9061D-01
54.1	5.3000D-01			
5.3000D-01	2.7042D-01	3.0450D-01	0.0	0.0
0.0	0.0	0.0	3.0450D-01	0.0
0.0	0.0	0.0	0.0	3.0450D-01
55.1	5.4000D-01			
5.4000D-01	2.9773D-01	3.2075D-01	0.0	0.0
0.0	0.0	0.0	3.2075D-01	0.0
0.0	0.0	0.0	0.0	3.2075D-01

14

56.1	5.5000D-01			
5.5000D-01	3.2906D-01	3.3775D-01	0.0	0.0
0.0	0.0	0.0	3.3775D-01	0.0
0.0	0.0	0.0	0.0	3.3775D-01
57.1	5.6000D-01			
5.6000D-01	3.6069D-01	3.5381D-01	0.0	0.0
0.0	0.0	0.0	3.5381D-01	0.0
0.0	0.0	0.0	0.0	3.5381D-01
58.1	5.7000D-01			
5.7000D-01	3.8885D-01	3.6736D-01	0.0	0.0
0.0	0.0	0.0	3.6736D-01	0.0
0.0	0.0	0.0	0.0	3.6736D-01
59.1	5.8000D-01			
5.8000D-01	4.1026D-01	3.7719D-01	0.0	0.0
0.0	0.0	0.0	3.7719D-01	0.0
0.0	0.0	0.0	0.0	3.7719D-01
60.1	5.9000D-01			
5.9000D-01	4.2258D-01	3.8261D-01	0.0	0.0
0.0	0.0	0.0	3.8261D-01	0.0
0.0	0.0	0.0	0.0	3.8261D-01
61.1	6.0000D-01			
6.0000D-01	4.2477D-01	3.8353D-01	0.0	0.0
0.0	0.0	0.0	3.8353D-01	0.0
0.0	0.0	0.0	0.0	3.8353D-01
62.1	6.1000D-01			
6.1000D-01	4.1721D-01	3.8051D-01	0.0	0.0
0.0	0.0	0.0	3.8051D-01	0.0
0.0	0.0	0.0	0.0	3.8051D-01
63.1	6.2000D-01			
6.2000D-01	4.0165D-01	3.7464D-01	0.0	0.0
0.0	0.0	0.0	3.7464D-01	0.0
0.0	0.0	0.0	0.0	3.7464D-01
64.1	6.3000D-01			
6.3000D-01	3.8097D-01	3.6743D-01	0.0	0.0
0.0	0.0	0.0	3.6743D-01	0.0
0.0	0.0	0.0	0.0	3.6743D-01
65.1	6.4000D-01			
6.4000D-01	3.5874D-01	3.6057D-01	0.0	0.0
0.0	0.0	0.0	3.6057D-01	0.0
0.0	0.0	0.0	0.0	3.6057D-01
66.1	6.5000D-01			
6.5000D-01	3.3879D-01	3.5570D-01	0.0	0.0
0.0	0.0	0.0	3.5570D-01	0.0
0.0	0.0	0.0	0.0	3.5570D-01
67.1	6.6000D-01			
6.6000D-01	3.2457D-01	3.5419D-01	0.0	0.0
0.0	0.0	0.0	3.5419D-01	0.0
0.0	0.0	0.0	0.0	3.5419D-01
68.1	6.7000D-01			
6.7000D-01	3.1878D-01	3.5695D-01	0.0	0.0
0.0	0.0	0.0	3.5695D-01	0.0
0.0	0.0	0.0	0.0	3.5695D-01
69.1	6.8000D-01			
6.8000D-01	3.2291D-01	3.6427D-01	0.0	0.0
0.0	0.0	0.0	3.6427D-01	0.0
0.0	0.0	0.0	0.0	3.6427D-01
70.1	6.9000D-01			
6.9000D-01	3.3704D-01	3.7580D-01	0.0	0.0
0.0	0.0	0.0	3.7580D-01	0.0
0.0	0.0	0.0	0.0	3.7580D-01

71.1	7.0000D-01				
7.0000D-01	3.5989D-01	3.9061D-01	0.0	0.0	
0.0	0.0	0.0	3.9061D-01	0.0	
0.0	0.0	0.0	0.0	3.9061D-01	
72.1	7.1000D-01				
7.1000D-01	3.8892D-01	4.0729D-01	0.0	0.0	
0.0	0.0	0.0	4.0729D-01	0.0	
0.0	0.0	0.0	0.0	4.0729D-01	
73.1	7.2000D-01				
7.2000D-01	4.2075D-01	4.2419D-01	0.0	0.0	
0.0	0.0	0.0	4.2419D-01	0.0	
0.0	0.0	0.0	0.0	4.2419D-01	
74.1	7.3000D-01				
7.3000D-01	4.5159D-01	4.3961D-01	0.0	0.0	
0.0	0.0	0.0	4.3961D-01	0.0	
0.0	0.0	0.0	0.0	4.3961D-01	
75.1	7.4000D-01				
7.4000D-01	4.7779D-01	4.5206D-01	0.0	0.0	
0.0	0.0	0.0	4.5206D-01	0.0	
0.0	0.0	0.0	0.0	4.5206D-01	
76.1	7.5000D-01				
7.5000D-01	4.9635D-01	4.6049D-01	0.0	0.0	
0.0	0.0	0.0	4.6049D-01	0.0	
0.0	0.0	0.0	0.0	4.6049D-01	
77.1	7.6000D-01				
7.6000D-01	5.0534D-01	4.6438D-01	0.0	0.0	
0.0	0.0	0.0	4.6438D-01	0.0	
0.0	0.0	0.0	0.0	4.6438D-01	
78.1	7.7000D-01				
7.7000D-01	5.0419D-01	4.6388D-01	0.0	0.0	
0.0	0.0	0.0	4.6388D-01	0.0	
0.0	0.0	0.0	0.0	4.6388D-01	
79.1	7.8000D-01				
7.8000D-01	4.9373D-01	4.5974D-01	0.0	0.0	
0.0	0.0	0.0	4.5974D-01	0.0	
0.0	0.0	0.0	0.0	4.5974D-01	
80.1	7.9000D-01				
7.9000D-01	4.7612D-01	4.5323D-01	0.0	0.0	
0.0	0.0	0.0	4.5323D-01	0.0	
0.0	0.0	0.0	0.0	4.5323D-01	
81.1	8.0000D-01				
8.0000D-01	4.5451D-01	4.4593D-01	0.0	0.0	
0.0	0.0	0.0	4.4593D-01	0.0	
0.0	0.0	0.0	0.0	4.4593D-01	
82.1	8.1000D-01				
8.1000D-01	4.3263D-01	4.3956D-01	0.0	0.0	
0.0	0.0	0.0	4.3956D-01	0.0	
0.0	0.0	0.0	0.0	4.3956D-01	
83.1	8.2000D-01				
8.2000D-01	4.1421D-01	4.3570D-01	0.0	0.0	
0.0	0.0	0.0	4.3570D-01	0.0	
0.0	0.0	0.0	0.0	4.3570D-01	
84.1	8.3000D-01				
8.3000D-01	4.0255D-01	4.3555D-01	0.0	0.0	
0.0	0.0	0.0	4.3555D-01	0.0	
0.0	0.0	0.0	0.0	4.3555D-01	
85.1	8.4000D-01				
8.4000D-01	3.9995D-01	4.3984D-01	0.0	0.0	
0.0	0.0	0.0	4.3984D-01	0.0	
0.0	0.0	0.0	0.0	4.3984D-01	

16	86.1	8.5000D-01			
	8.5000D-01	4.0746D-01	4.4864D-01	0.0	0.0
	0.0	0.0	0.0	4.4864D-01	0.0
	0.0	0.0	0.0	0.0	4.4864D-01
	87.1	8.6000D-01			
	8.6000D-01	4.2472D-01	4.6139D-01	0.0	0.0
	0.0	0.0	0.0	4.6139D-01	0.0
	0.0	0.0	0.0	0.0	4.6139D-01
	88.1	8.7000D-01			
	8.7000D-01	4.4997D-01	4.7699D-01	0.0	0.0
	0.0	0.0	0.0	4.7699D-01	0.0
	0.0	0.0	0.0	0.0	4.7699D-01
	89.1	8.8000D-01			
	8.8000D-01	4.8035D-01	4.9393D-01	0.0	0.0
	0.0	0.0	0.0	4.9393D-01	0.0
	0.0	0.0	0.0	0.0	4.9393D-01
	90.1	8.9000D-01			
	8.9000D-01	5.1228D-01	5.1051D-01	0.0	0.0
	0.0	0.0	0.0	5.1051D-01	0.0
	0.0	0.0	0.0	0.0	5.1051D-01
	91.1	9.0000D-01			
	9.0000D-01	5.4196D-01	5.2508D-01	0.0	0.0
	0.0	0.0	0.0	5.2508D-01	0.0
	0.0	0.0	0.0	0.0	5.2508D-01
	92.1	9.1000D-01			
	9.1000D-01	5.6589D-01	5.3629D-01	0.0	0.0
	0.0	0.0	0.0	5.3629D-01	0.0
	0.0	0.0	0.0	0.0	5.3629D-01
	93.1	9.2000D-01			
	9.2000D-01	5.8141D-01	5.4323D-01	0.0	0.0
	0.0	0.0	0.0	5.4323D-01	0.0
	0.0	0.0	0.0	0.0	5.4323D-01
	94.1	9.3000D-01			
	9.3000D-01	5.8701D-01	5.4562D-01	0.0	0.0
	0.0	0.0	0.0	5.4562D-01	0.0
	0.0	0.0	0.0	0.0	5.4562D-01
	95.1	9.4000D-01			
	9.4000D-01	5.8259D-01	5.4380D-01	0.0	0.0
	0.0	0.0	0.0	5.4380D-01	0.0
	0.0	0.0	0.0	0.0	5.4380D-01
	96.1	9.5000D-01			
	9.5000D-01	5.6945D-01	5.3871D-01	0.0	0.0
	0.0	0.0	0.0	5.3871D-01	0.0
	0.0	0.0	0.0	0.0	5.3871D-01
	97.1	9.6000D-01			
	9.6000D-01	5.5012D-01	5.3175D-01	0.0	0.0
	0.0	0.0	0.0	5.3175D-01	0.0
	0.0	0.0	0.0	0.0	5.3175D-01
	98.1	9.7000D-01			
	9.7000D-01	5.2800D-01	5.2457D-01	0.0	0.0
	0.0	0.0	0.0	5.2457D-01	0.0
	0.0	0.0	0.0	0.0	5.2457D-01
	99.1	9.8000D-01			
	9.8000D-01	5.0687D-01	5.1887D-01	0.0	0.0
	0.0	0.0	0.0	5.1887D-01	0.0
	0.0	0.0	0.0	0.0	5.1887D-01
	100.1	9.9000D-01			
	9.9000D-01	4.9038D-01	5.1613D-01	0.0	0.0
	0.0	0.0	0.0	5.1613D-01	0.0
	0.0	0.0	0.0	0.0	5.1613D-01



[illegible]

## APPENDIX B. BASE PROGRAM TEST CASE 7

```
*****  
* SIMVIB PROGRAM *  
* INPUT AND INTERNAL CALCULATIONS *  
* EMPLOY STANDARD UNITS *  
* (FOOT, POUND, SECOND) *  
*****
```

```
SIMVIB CHECK CASE 7 FOR CDC COMPUTER  
1-D SINGLE ISOLATOR - OUTPUT IN G'S  
1 TRANS. & 2 FUS. MODES - FZ FORCE  
FREQUENCY (HZ)
```

# INPUT DECK CARD IMAGE LISTING

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```

IS1      1      0      /* FIRST ISOLATOR          */ 0006002
1 / 1.000D+00 2.000D+00 0.0 /* CONNECTION NODES          */ 0007002
3 / 1.750D+00 1.370D+01 0.0 /* LENGTHS A AND B          (IN) */ 0008002
7 / 4.800D+00 0.0 0.0 /* MASS1                      (LB) */ 0009002
12 / 1.000D+09 1.000D+09 1.000D+09 /* K TRANSM. PIVOT (LB/IN) */ 0010002
15 / 1.000D+09 1.000D+09 2.400D+04 /* K TRANSM./FUSEL. (LB/IN) */ 0011002
18 / 1.000D+09 1.000D+09 1.000D+09 /* K FUSEL. PIVOT (LB/IN) */ 0012002
21 / 0.0 0.0 0.0 /* K ROTATIONAL (IN-LB/RAD) */ 0013002
24 / 0.0 0.0 0.0 /* C TRANSM. PIVOT (ND) */ 0014002
27 / 0.0 0.0 0.0 /* C TRANSM./FUSEL. (ND) */ 0015002
30 / 0.0 0.0 0.0 /* C FUSEL. PIVOT (ND) */ 0016002
33 / 0.0 0.0 0.0 /* C ROTATIONAL (ND) */ 0017002
36 / 0.0 0.0 0.0 /* FREQUENCY TRANS PIVOT (HZ) */ 0018002
39 / 0.0 0.0 0.0 /* FREQUENCY TRANS/FUSEL (HZ) */ 0019002
42 / 0.0 0.0 0.0 /* FREQUENCY FUSEL PIVOT (HZ) */ 0020002
45 / 0.0 0.0 0.0 /* FREQUENCY ROTATIONAL (HZ) */ 0021002
48 / 2.000D+00 0.0 0.0 /* TWO-DIM. ISOLATOR OPTION */ 0022002
49 / 0.0 0.0 0.0 /* RIGID ISOLATOR BAR OPTION */ 0023002
56 / 0.0 0.0 0.0 /* TRANS. EULER ANGLES (DEG) */ 0024002
-59 / 0.0 0.0 0.0 /* FUSEL. EULER ANGLES (DEG) */ 0025002

```

```

MS1      2      0      /* FUSELAGE FIRST MODE SHAPE */ 0027002
1 / 0.0 0.0 0.0 /* DAMPING RATIO (ND) */ 0028002
2 / 1.178D+00 0.0 0.0 /* GENERAL. MASS (LB-SEC2/IN) */ 0029002
3 / 0.0 0.0 0.0 /* FREQUENCY (HZ) */ 0030002
4 / 1.000D+00 0.0 0.0 /* NUMBER OF NODES */ 0031002
5 / 2.000D+00 0.0 0.0 /* NODE NUMBER(S) */ 0032002
8 / 0.0 0.0 0.0 /* NODE NUMBER(S) */ 0033002
10 / 0.0 0.0 1.000D+00 /* MODE SHAPE AT NODE2 (X-Z) */ 0034002
13 / 0.0 0.0 0.0 /* MODE SHAPE AT NODE2(TX-TZ) */ 0035002
-40 / 0.0 0.0 0.0 /* EULER ANGLES NODE2 (DEG) */ 0036002

```

```

MS1      3      0      /* FUSELAGE SECOND MODE      */ 0038002
1 / 0.0 0.0 0.0 /* DAMPING RATIO (ND) */ 0039002
2 / 0.0 0.0 0.0 /* GENERAL. MASS (LB-SEC2/IN) */ 0040002
3 / 1.000D+09 0.0 0.0 /* FREQUENCY (HZ) */ 0041002
4 / 1.000D+00 0.0 0.0 /* NUMBER OF NODES */ 0042002
5 / 2.000D+00 0.0 0.0 /* NODE NUMBER(S) */ 0043002
8 / 0.0 0.0 0.0 /* NODE NUMBER(S) */ 0044002
10 / 1.000D+00 0.0 0.0 /* MODE SHAPE AT NODE2 (X-Z) */ 0045002
13 / 0.0 0.0 0.0 /* MODE SHAPE AT NODE2(TX-TZ) */ 0046002
-40 / 0.0 0.0 0.0 /* EULER ANGLES NODE2 (DEG) */ 0047002

```

```

MS1      4      0      /* TRANSMISSION FIRST MODE   */ 0049002
1 / 0.0 0.0 0.0 /* DAMPING RATIO (ND) */ 0050002
2 / 8.410D-01 0.0 0.0 /* GENERAL. MASS (LB-SEC2/IN) */ 0051002
3 / 0.0 0.0 0.0 /* FREQUENCY (HZ) */ 0052002
4 / 1.000D+00 0.0 0.0 /* NUMBER OF NODES */ 0053002
5 / 1.000D+00 0.0 0.0 /* NODE NUMBER(S) */ 0054002
8 / 0.0 0.0 0.0 /* NODE NUMBER(S) */ 0055002
10 / 0.0 0.0 1.000D+00 /* MODE SHAPE AT NODE1 (X-Z) */ 0056002
13 / 0.0 0.0 0.0 /* MODE SHAPE AT NODE1(TX-TZ) */ 0057002
16 / 0.0 0.0 1.000D+00 /* MODE SHAPE AT NODE3 (X-Z) */ 0058002
19 / 0.0 0.0 0.0 /* MODE SHAPE AT NODE3(TX-TZ) */ 0059002
-40 / 0.0 0.0 0.0 /* EULER ANGLES NODE1 (DEG) */ 0060002

```

20

FR1	5	0	/* INPUT FORCING FREQUENCY */	0062002
1 /	5.000D+00	0.0	/* FREQUENCY (4P) (HZ) */	0063002
2 /	0.0	0.0	/* DEBUG SWITCH (NO=0,YES=1) */	0064003
-3 /	1.000D+00	0.0	/* OUTPUT IN G'S */	0065003
<hr/>				
GF1	6	0	/* INPUT GENERALIZED FORCE */	0067002
1 /	1.000D+00	0.0	/* NODE NUMBER */	0068002
2 /	0.0	0.0	/* EULER ANGLES (DEG) */	0069002
5 /	0.0	0.0	/* FORCES (CX, SX, CY, SY, CZ, SZ) */	0070002
8 /	0.0	1.000D+03	/* " " (LBS) */	0071002
11 /	0.0	0.0	/* MOMENTS (CX, SX, CY, SY, CZ, SZ) */	0072002
-14 /	0.0	0.0	/* " " (IN-LB) */	0073002
<hr/>				
PV1	7	0	/* PARAMETRIC VARIATION */	0075002
1 /	5.000D+00	0.0	/* STARTING VALUE (HZ) */	0076002
2 /	5.000D+01	0.0	/* END VALUE (HZ) */	0077002
3 /	1.900D+01	0.0	/* NUMBER OF POINTS */	0078003
-4 /	5.000D+00	1.000D+00	/* ELEMENT NUMBER AND LOCATION */	0079002
<hr/>				
GEN	8	0	/* GENERAL ELEMENT */	0084333
1 /	0.0	0.0	/* SUPPRESS FINAL RESULTS */	0084343
2 /	1.000D+00	0.0	/* DO NOT SUPPRESS INPUT LISTS */	0084353
-10 /	4.800D+00	0.0	/* VALUE FOR 3-D PLOTS- MASS1 */	0084363
<hr/>				
STOP				

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 2

1 ZETA DAMPING RATIO (ND)

0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN)

1.17800D+00

3 OMEGA MODE FREQUENCY (HERTZ)

0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE

1

5 NNODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

2 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	0.0	1.0000D+00	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN)

0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC)

0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 3

22 1 ZETA DAMPING RATIO (ND) 0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 0.0

3 OMEGA MODE FREQUENCY (HERTZ) 1.00000D+09

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NNODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE  
2 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1		1.0000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2		0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3		0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4		0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5		0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

			THETA	PHI	XSI
40 - 42	NODE 1		0.0	0.0	0.0
43 - 45	NODE 2		0.0	0.0	0.0
46 - 48	NODE 3		0.0	0.0	0.0
49 - 51	NODE 4		0.0	0.0	0.0
52 - 54	NODE 5		0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 4

1 ZETA DAMPING RATIO (ND) 0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 8.41000D-01

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	0.0	0.0	1.0000D+00	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	1.0000D+00	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

			THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:FORCER1

\*\*\*\*\* FORCED RESPONSE SOLUTION TYPE 1 \*\*\*\*\*

ELEMENT:

5

24

1 OMEGA FORCING FREQUENCY (HERTZ)

5.000000D+00

2 IDEBUG DEBUG SELECTOR

0

= 0 ==> NO DEBUG PRINTOUT

= 1 ==> TRACE MATRIX ASSEMBLY AND SOLUTION

3 ICONVG OUTPUT DISPLAY SELECTOR

1

= 0 ==> DISPLACEMENTS (FEET)

= 1 ==> ACCELERATIONS (G'S)



COMPONENT: GENFOR1

\*\*\*\*\* GENERALIZED FORCE TYPE 1 (USED WITH FORCER1) \*\*\*\*\*

ELEMENT: 6

1	NCN	CONNECTION NODE NUMBER (ND)	1
2	THETA	EULER PITCH ANGLE (DEGREES) - ROTATE SECOND ABOUT THE Y-AXIS	0.0
3	PHI	EULER ROLL ANGLE (DEGREES) - ROTATE THIRD ABOUT THE X-AXIS	0.0
4	XSI	EULER YAW ANGLE (DEGREES) - ROTATE FIRST ABOUT THE Z-AXIS	0.0
5	FXCOS	COSINE COMPONENT OF X DIRECTION FORCE (LB)	0.0
6	FXSIN	SINE COMPONENT OF X DIRECTION FORCE (LB)	0.0
7	FYCOS	COSINE COMPONENT OF Y DIRECTION FORCE (LB)	0.0
8	FYSIN	SINE COMPONENT OF Y DIRECTION FORCE (LB)	0.0
9	FZCOS	COSINE COMPONENT OF Z DIRECTION FORCE (LB)	1.00000D+03
10	FZSIN	SINE COMPONENT OF Z DIRECTION FORCE (LB)	0.0
11	FT1COS	COSINE COMPONENT OF THETA 1 MOMENT (LB)	0.0
12	FT1SIN	SINE COMPONENT OF THETA 1 MOMENT (IN-LB)	0.0
13	FT2COS	COSINE COMPONENT OF THETA 2 MOMENT (IN-LB)	0.0
14	FT2SIN	SINE COMPONENT OF THETA 2 MOMENT (IN-LB)	0.0
15	FT3COS	COSINE COMPONENT OF THETA 3 MOMENT (IN-LB)	0.0
16	FT3SIN	SINE COMPONENT OF THETA 3 MOMENT (IN-LB)	0.0
17	IHRESP	HHC FLAG = 0 HHC NOT ACTIVE = 1 HHC ACTIVE	0
18	WZX	WEIGHT FOR X RESPONSE	0.0
19	WZY	WEIGHT FOR Y RESPONSE	0.0
20	WZZ	WEIGHT FOR Z RESPONSE	0.0
21	WZX	WEIGHT FOR THETA1 RESPONSE	0.0
22	WZY	WEIGHT FOR THETA2 RESPONSE	0.0
23	WZW	WEIGHT FOR THETA3 RESPONSE	0.0

COMPONENT:PARMV1

\*\*\*\*\* PARAMETRIC VARIATION TYPE 1 \*\*\*\*\*

ELEMENT: 7

26

1 FIRSTV STARTING VALUE FOR PARAMETRIC VARIATION 5.00000D+00

2 FINALV FINAL VALUE FOR PARAMETRIC VARIATION 5.00000D+01

3 NPTS NUMBER OF POINTS IN PARAMETRIC VARIATION 19

4 NEL GLOBAL ELEMENT NUMBER AND CORRESPONDING LOADER LOCATION FOR INDEPENDENT VARIABLE  
TO BE PARAMETRICALLY VARIED (UP TO 10 PAIRS)

5	1
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

11

COMPONENT:GENINPUT

\*\*\*\*\* GENERAL INPUT FOR PROGRAM CONTROL \*\*\*\*\*

ELEMENT: 8

1 ICNTL1 PRINT SELECTOR FOR FINAL RESULTS 0

= 0 ==> SUPPRESS LINE PRINTER OUTPUT  
= 1 ==> FULL LINE PRINTER OUTPUT

2 ICNTL2 PRINT SELECTOR FOR COMPONENT INPUTS 1

= 0 ==> SUPPRESS LINE PRINTER OUTPUT  
= 1 ==> FULL LINE PRINTER OUTPUT

3-9 ----- OPEN LOCATIONS FOR FUTURE USE

10 XINDEP INDEPENDENT VARIABLE FOR 3-D PLOTS 4.80000D+00

COMPONENT: ISOLATE1

\*\*\*\*\* ISOLATOR TYPE 1 \*\*\*\*\*

ELEMENT: 1

1	NCN1	CONNECTION NODE NUMBER 1	(ND)	1
2	NCN2	CONNECTION NODE NUMBER 2	(ND)	2
3	AL	DISTANCE BETWEEN NODE 1 & PIVOT 2	(IN)	1.75000D+00
4	BL	DISTANCE BETWEEN PIVOT 2 & Y-Z ISOLATOR	(IN)	1.37000D+01
5	CL	DISTANCE BETWEEN PIVOT 2 & NODE 2	(IN)	0.0
6	DL	DISTANCE BETWEEN PIVOT 2 & X ISOLATOR	(IN)	0.0
7	W1	WEIGHT OF Y-Z ISOLATOR	(LBS)	4.80000D+00
8	XI1Y	INERTIA OF Y-Z ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
9	XI1Z	INERTIA OF Y-Z ISOLATOR ABOUT THE Z-AXIS	(IN-LB-SEC**2)	0.0
10	W2	WEIGHT OF X ISOLATOR	(LBS)	0.0
11	XI2Y	INERTIA OF X ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
12	TKTX	X STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
13	TKTY	Y STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
14	TKTZ	Z STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
15	TKEX	X STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+09
16	TKEY	Y STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+09
17	TKEZ	Z STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	2.40000D+04
18	TKAX	X STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
19	TKAY	Y STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
20	TKAZ	Z STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
21	RKTHB	ROTATIONAL STIFFNESS OF NODE 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
22	RKTHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
23	RKPHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Z-AXIS	(IN-LB/RAD)	0.0
24	TCTX	X DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	0.0
25	TCTY	Y DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	0.0
26	TCTZ	Z DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	0.0
27	TCEX	X DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	0.0
28	TCEY	Y DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	0.0

29	TCEZ	Z DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	0.0
30	TCAX	X DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	0.0
31	TCAY	Y DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	0.0
32	TCAZ	Z DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	0.0
33	RCTHB	ROTATIONAL DAMPING OF NODE 2 ABOUT THE Y-AXIS	(ND)	0.0
34	RCTHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Y-AXIS	(ND)	0.0
35	RCPHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Z-AXIS	(ND)	0.0
36	MTX	X FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	0.0
37	MTY	Y FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	0.0
38	MTZ	Z FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	0.0
39	WEX	X FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	0.0
40	WEY	Y FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	0.0
41	WEZ	Z FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	0.0
42	WAX	X FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	0.0
43	WAY	Y FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	0.0
44	WAZ	Z FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	0.0
45	RCTHB	ROTATIONAL FREQUENCY OF NODE 2 ABOUT THE Y-AXIS	(HZ)	0.0
46	RCTHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Y-AXIS	(HZ)	0.0
47	RCPHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Z-AXIS	(HZ)	0.0
48	I3D2D	CONTROL SWITCH ==> 2 FOR 2-D DAVI & ==> 3 FOR 3-D DAVI ISOLATOR	(ND)	2
49	IFLEX	ACCOUNT FOR FLEXIBILITY OF ISOLATOR BARS ==>0 - NO & ==>1 - YES	(ND)	0
50	RXYM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
51	RXZM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
52	RXZM2	FREQUENCY RATIO OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
53	DXYM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
54	DXZM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
55	DXZM2	CRITICAL DAMPING OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
56	THETA1	EULER PITCH ANGLE AT END 1 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
57	PHI1	EULER ROLL ANGLE AT END 1 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
58	XS11	EULER YAW ANGLE AT END 1 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	0.0

59	THETA2	EULER PITCH ANGLE AT END 2 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
60	PHI2	EULER ROLL ANGLE AT END 2 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
61	XSI2	EULER YAW ANGLE AT END 2 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	0.0
62	XT	PIVOT 1 INITIAL X DISPLACEMENT	(INCH)	0.0
63	DXT	PIVOT 1 INITIAL X VELOCITY	(IN/SEC)	0.0
64	YT	PIVOT 1 INITIAL Y DISPLACEMENT	(INCH)	0.0
65	DYT	PIVOT 1 INITIAL Y VELOCITY	(IN/SEC)	0.0
66	ZT	PIVOT 1 INITIAL Z DISPLACEMENT	(INCH)	0.0
67	DZT	PIVOT 1 INITIAL Z VELOCITY	(IN/SEC)	0.0
68	XB	PIVOT 2 INITIAL X DISPLACEMENT	(INCH)	0.0
69	DXB	PIVOT 2 INITIAL X VELOCITY	(IN/SEC)	0.0
70	YB	PIVOT 2 INITIAL Y DISPLACEMENT	(INCH)	0.0
71	DYB	PIVOT 2 INITIAL Y VELOCITY	(IN/SEC)	0.0
72	ZB	PIVOT 2 INITIAL Z DISPLACEMENT	(INCH)	0.0
73	DZB	PIVOT 2 INITIAL Z VELOCITY	(IN/SEC)	0.0

NUMBER	OUTPUT COORDINATES					VALUE
30	1	ELEMENT	1	IS1	XT	AMPLITUD 0.0
	2	ELEMENT	1	IS1	XT	PHASE 0.0
	3	ELEMENT	1	IS1	YT	AMPLITUD 0.0
	4	ELEMENT	1	IS1	YT	PHASE 0.0
	5	ELEMENT	1	IS1	ZT	AMPLITUD 1.2287D+00
	6	ELEMENT	1	IS1	ZT	PHASE 1.8000D+02
	7	ELEMENT	1	IS1	XB	AMPLITUD 0.0
	8	ELEMENT	1	IS1	XB	PHASE 0.0
	9	ELEMENT	1	IS1	YB	AMPLITUD 0.0
	10	ELEMENT	1	IS1	YB	PHASE 0.0
	11	ELEMENT	1	IS1	ZB	AMPLITUD 1.3001D+00
	12	ELEMENT	1	IS1	ZB	PHASE 1.8000D+02
	13	ELEMENT	1	IS1	XBT	AMPLITUD 0.0
	14	ELEMENT	1	IS1	XBT	PHASE 0.0
	15	ELEMENT	1	IS1	YBT	AMPLITUD 0.0
	16	ELEMENT	1	IS1	YBT	PHASE 0.0
	17	ELEMENT	1	IS1	ZBT	AMPLITUD 1.2287D+00
	18	ELEMENT	1	IS1	ZBT	PHASE 1.8000D+02
	19	ELEMENT	1	IS1	TXBT	AMPLITUD 0.0
	20	ELEMENT	1	IS1	TXBT	PHASE 0.0
	21	ELEMENT	1	IS1	TYBT	AMPLITUD 0.0
	22	ELEMENT	1	IS1	TYBT	PHASE 0.0
	23	ELEMENT	1	IS1	TZBT	AMPLITUD 0.0
	24	ELEMENT	1	IS1	TZBT	PHASE 0.0
	25	ELEMENT	1	IS1	XBF	AMPLITUD 0.0
	26	ELEMENT	1	IS1	XBF	PHASE 0.0
	27	ELEMENT	1	IS1	YBF	AMPLITUD 0.0
	28	ELEMENT	1	IS1	YBF	PHASE 0.0
	29	ELEMENT	1	IS1	ZBF	AMPLITUD 1.3001D+00
	30	ELEMENT	1	IS1	ZBF	PHASE 1.8000D+02
	31	ELEMENT	1	IS1	TXBF	AMPLITUD 0.0
	32	ELEMENT	1	IS1	TXBF	PHASE 0.0
	33	ELEMENT	1	IS1	TYBF	AMPLITUD 0.0
	34	ELEMENT	1	IS1	TYBF	PHASE 0.0
	35	ELEMENT	1	IS1	TZBF	AMPLITUD 0.0
	36	ELEMENT	1	IS1	TZBF	PHASE 0.0
	37	ELEMENT	2	MS1	MODE	AMPLITUD 1.3001D+00
	38	ELEMENT	2	MS1	MODE	PHASE 1.8000D+02
	39	ELEMENT	3	MS1	MODE	AMPLITUD 0.0
	40	ELEMENT	3	MS1	MODE	PHASE 0.0
	41	ELEMENT	4	MS1	MODE	AMPLITUD 1.2287D+00
	42	ELEMENT	4	MS1	MODE	PHASE 1.8000D+02
	43	ELEMENT	6	GF1	X	AMPLITUD 0.0
	44	ELEMENT	6	GF1	X	PHASE 0.0
	45	ELEMENT	6	GF1	Y	AMPLITUD 0.0
	46	ELEMENT	6	GF1	Y	PHASE 0.0
	47	ELEMENT	6	GF1	Z	AMPLITUD 1.2287D+00
	48	ELEMENT	6	GF1	Z	PHASE 1.8000D+02
	49	ELEMENT	6	GF1	THTX	AMPLITUD 0.0
	50	ELEMENT	6	GF1	THTX	PHASE 0.0
	51	ELEMENT	6	GF1	THTY	AMPLITUD 0.0
	52	ELEMENT	6	GF1	THTY	PHASE 0.0
	53	ELEMENT	6	GF1	THTZ	AMPLITUD 0.0
	54	ELEMENT	6	GF1	THTZ	PHASE 0.0

FINAL SIZE OF WORKING STORAGE (MAXSIZ) IS 3055 WORDS.

\*\*\*\*\* STATISTICS \*\*\*\*\*

BASE PROGRAM CASE 7

1-D SINGLE ISOLATOR - OUTPUT IN G'S

1 TRANS. & 2 FUS. MODES - FZ FORCE

FREQUENCY (HZ)

19.1 54.1 4.8000

1.1 1IS1 XT AMPLITUD

2.1 1IS1 XT PHASE

3.1 1IS1 YT AMPLITUD

4.1 1IS1 YT PHASE

5.1 1IS1 ZT AMPLITUD

6.1 1IS1 ZT PHASE

7.1 1IS1 XB AMPLITUD

8.1 1IS1 XB PHASE

9.1 1IS1 YB AMPLITUD

10.1 1IS1 YB PHASE

11.1 1IS1 ZB AMPLITUD

12.1 1IS1 ZB PHASE

13.1 1IS1 XBT AMPLITUD

14.1 1IS1 XBT PHASE

15.1 1IS1 YBT AMPLITUD

16.1 1IS1 YBT PHASE

17.1 1IS1 ZBT AMPLITUD

18.1 1IS1 ZBT PHASE

19.1 1IS1 TXBTAMPLITUD

20.1 1IS1 TXBT PHASE

21.1 1IS1 TYBTAMPLITUD

22.1 1IS1 TYBT PHASE

23.1 1IS1 TZBTAMPLITUD

24.1 1IS1 TZBT PHASE

25.1 1IS1 XBF AMPLITUD

26.1 1IS1 XBF PHASE

27.1 1IS1 YBF AMPLITUD

28.1 1IS1 YBF PHASE

29.1 1IS1 ZBF AMPLITUD

30.1 1IS1 ZBF PHASE

31.1 1IS1 TXBFAMPLITUD

32.1 1IS1 TXBF PHASE

33.1 1IS1 TYBFAMPLITUD

34.1 1IS1 TYBF PHASE

35.1 1IS1 TZBFAMPLITUD

36.1 1IS1 TZBF PHASE

37.1 2MS1 MODEAMPLITUD

38.1 2MS1 MODEPHASE

39.1 3MS1 MODEAMPLITUD

40.1 3MS1 MODEPHASE

41.1 4MS1 MODEAMPLITUD

42.1 4MS1 MODEPHASE

43.1 6GF1 X AMPLITUD

44.1 6GF1 X PHASE

45.1 6GF1 Y AMPLITUD

46.1 6GF1 Y PHASE

47.1 6GF1 Z AMPLITUD

48.1 6GF1 Z PHASE

49.1 6GF1 THTXAMPLITUD

50.1 6GF1 THTXPHASE

51.1 6GF1 THTYAMPLITUD

52.1 6GF1 THTYPHASE

53.1 6GF1 THTZAMPLITUD

54.1 6GF1 THTZPHASE

1.1 5.0000D+00

NOTE: DATA WRITTEN TO UNIT 2 FOR PLOTTING  
(SEE REF1, FIGURE 46) - FREQUENCIES 5 TO 50 HZ



0.0	0.0	0.0	0.0	1.2287D+00
1.8000D+02	0.0	0.0	0.0	0.0
1.3001D+00	1.8000D+02	0.0	0.0	0.0
0.0	1.2287D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.3001D+00	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	1.3001D+00	1.8000D+02	0.0	0.0
1.2287D+00	1.8000D+02	0.0	0.0	0.0
0.0	1.2287D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
2.1	7.5000D+00			
0.0	0.0	0.0	0.0	1.1643D+00
1.8000D+02	0.0	0.0	0.0	0.0
1.3374D+00	1.8000D+02	0.0	0.0	0.0
0.0	1.1643D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.3374D+00	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	1.3374D+00	1.8000D+02	0.0	0.0
1.1643D+00	1.8000D+02	0.0	0.0	0.0
0.0	1.1643D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
3.1	1.0000D+01			
0.0	0.0	0.0	0.0	1.0550D+00
1.8000D+02	0.0	0.0	0.0	0.0
1.4004D+00	1.8000D+02	0.0	0.0	0.0
0.0	1.0550D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.4005D+00	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	1.4005D+00	1.8000D+02	0.0	0.0
1.0550D+00	1.8000D+02	0.0	0.0	0.0
0.0	1.0550D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
4.1	1.2500D+01			
0.0	0.0	0.0	0.0	8.6790D-01
1.8000D+02	0.0	0.0	0.0	0.0
1.5085D+00	1.8000D+02	0.0	0.0	0.0
0.0	8.6788D-01	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.5085D+00	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	1.5085D+00	1.8000D+02	0.0	0.0
8.6788D-01	1.8000D+02	0.0	0.0	0.0
0.0	8.6788D-01	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
5.1	1.5000D+01			
0.0	0.0	0.0	0.0	5.1599D-01
1.8000D+02	0.0	0.0	0.0	0.0
1.7118D+00	1.8000D+02	0.0	0.0	0.0
0.0	5.1597D-01	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.7118D+00	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	1.7118D+00	1.8000D+02	0.0	0.0
5.1597D-01	1.8000D+02	0.0	0.0	0.0
0.0	5.1597D-01	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
6.1	1.7500D+01			

0.0	0.0	0.0	0.0	3.1350D-01
0.0	0.0	0.0	0.0	0.0
2.1909D+00	1.8000D+02	0.0	0.0	0.0
0.0	3.1353D-01	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	2.1909D+00	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	2.1909D+00	1.8000D+02	0.0	0.0
3.1353D-01	0.0	0.0	0.0	0.0
0.0	3.1353D-01	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
7.1	2.0000D+01	0.0	0.0	4.2050D+00
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
4.4386D+00	1.8000D+02	0.0	0.0	0.0
0.0	4.2051D+00	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	4.4387D+00	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	4.4387D+00	1.8000D+02	0.0	0.0
4.2051D+00	0.0	0.0	0.0	0.0
0.0	4.2051D+00	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
8.1	2.2500D+01	0.0	0.0	9.3235D+00
0.0	0.0	0.0	0.0	0.0
1.8000D+02	0.0	0.0	0.0	0.0
3.3754D+00	0.0	0.0	0.0	0.0
0.0	9.3236D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	3.3754D+00	0.0
0.0	0.0	0.0	0.0	0.0
0.0	3.3754D+00	0.0	0.0	0.0
9.3236D+00	1.8000D+02	0.0	0.0	0.0
0.0	9.3236D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
9.1	2.5000D+01	0.0	0.0	4.1840D+00
0.0	0.0	0.0	0.0	0.0
1.8000D+02	0.0	0.0	0.0	0.0
4.0681D-01	0.0	0.0	0.0	0.0
0.0	4.1840D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	4.0683D-01	0.0
0.0	0.0	0.0	0.0	0.0
0.0	4.0683D-01	0.0	0.0	0.0
4.1840D+00	1.8000D+02	0.0	0.0	0.0
0.0	4.1840D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
10.1	2.7500D+01	0.0	0.0	3.2503D+00
0.0	0.0	0.0	0.0	0.0
1.8000D+02	0.0	0.0	0.0	0.0
1.3245D-01	1.8000D+02	0.0	0.0	0.0
0.0	3.2503D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.3245D-01	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	1.3245D-01	1.8000D+02	0.0	0.0
3.2503D+00	1.8000D+02	0.0	0.0	0.0
0.0	3.2503D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
11.1	3.0000D+01	0.0	0.0	

0.0	0.0	0.0	0.0	2.8627D+00
1.8000D+02	0.0	0.0	0.0	0.0
3.5636D-01	1.8000D+02	0.0	0.0	0.0
0.0	2.8626D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	3.5638D-01	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	3.5638D-01	1.8000D+02	0.0	0.0
2.8626D+00	1.8000D+02	0.0	0.0	0.0
0.0	2.8626D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
12.1	3.2500D+01	0.0	0.0	2.6523D+00
0.0	0.0	0.0	0.0	0.0
1.8000D+02	0.0	0.0	0.0	0.0
4.7769D-01	1.8000D+02	0.0	0.0	0.0
0.0	2.6522D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	4.7791D-01	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	4.7791D-01	1.8000D+02	0.0	0.0
2.6522D+00	1.8000D+02	0.0	0.0	0.0
0.0	2.6522D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
13.1	3.5000D+01	0.0	0.0	2.5212D+00
0.0	0.0	0.0	0.0	0.0
1.8000D+02	0.0	0.0	0.0	0.0
5.5359D-01	1.8000D+02	0.0	0.0	0.0
0.0	2.5212D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	5.5362D-01	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	5.5362D-01	1.8000D+02	0.0	0.0
2.5212D+00	1.8000D+02	0.0	0.0	0.0
0.0	2.5212D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
14.1	3.7500D+01	0.0	0.0	2.4323D+00
0.0	0.0	0.0	0.0	0.0
1.8000D+02	0.0	0.0	0.0	0.0
6.0491D-01	1.8000D+02	0.0	0.0	0.0
0.0	2.4323D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	6.0495D-01	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	6.0495D-01	1.8000D+02	0.0	0.0
2.4323D+00	1.8000D+02	0.0	0.0	0.0
0.0	2.4323D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
15.1	4.0000D+01	0.0	0.0	2.3685D+00
0.0	0.0	0.0	0.0	0.0
1.8000D+02	0.0	0.0	0.0	0.0
6.4177D-01	1.8000D+02	0.0	0.0	0.0
0.0	2.3685D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	6.4182D-01	1.8000D+02
0.0	0.0	0.0	0.0	0.0
0.0	6.4182D-01	1.8000D+02	0.0	0.0
2.3685D+00	1.8000D+02	0.0	0.0	0.0
0.0	2.3685D+00	1.8000D+02	0.0	0.0
0.0	0.0	0.0	0.0	0.0
16.1	4.2500D+01	0.0	0.0	

96	0.0	0.0	0.0	0.0	2.3207D+00
	1.8000D+02	0.0	0.0	0.0	0.0
	6.6938D-01	1.8000D+02	0.0	0.0	0.0
	0.0	2.3207D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	6.6943D-01	1.8000D+02
	0.0	0.0	0.0	0.0	0.0
	0.0	6.6943D-01	1.8000D+02	0.0	0.0
	2.3207D+00	1.8000D+02	0.0	0.0	0.0
	0.0	2.3207D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	17.1	4.5000D+01			
	0.0	0.0	0.0	0.0	2.2838D+00
	1.8000D+02	0.0	0.0	0.0	0.0
	6.9072D-01	1.8000D+02	0.0	0.0	0.0
	0.0	2.2837D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	6.9078D-01	1.8000D+02
	0.0	0.0	0.0	0.0	0.0
	0.0	6.9078D-01	1.8000D+02	0.0	0.0
	2.2837D+00	1.8000D+02	0.0	0.0	0.0
	0.0	2.2837D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	18.1	4.7500D+01			
	0.0	0.0	0.0	0.0	2.2545D+00
	1.8000D+02	0.0	0.0	0.0	0.0
	7.0763D-01	1.8000D+02	0.0	0.0	0.0
	0.0	2.2544D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	7.0771D-01	1.8000D+02
	0.0	0.0	0.0	0.0	0.0
	0.0	7.0771D-01	1.8000D+02	0.0	0.0
	2.2544D+00	1.8000D+02	0.0	0.0	0.0
	0.0	2.2544D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	19.1	5.0000D+01			
	0.0	0.0	0.0	0.0	2.2308D+00
	1.8000D+02	0.0	0.0	0.0	0.0
	7.2132D-01	1.8000D+02	0.0	0.0	0.0
	0.0	2.2307D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	7.2140D-01	1.8000D+02
	0.0	0.0	0.0	0.0	0.0
	0.0	7.2140D-01	1.8000D+02	0.0	0.0
	2.2307D+00	1.8000D+02	0.0	0.0	0.0
	0.0	2.2307D+00	1.8000D+02	0.0	0.0
	0.0	0.0	0.0	0.0	0.0

APPENDIX C. BASE PROGRAM TEST CASE 11

```
*****  
* SIMVIB PROGRAM *  
* INPUT AND INTERNAL CALCULATIONS *  
* EMPLOY STANDARD UNITS *  
* (FOOT, POUND, SECOND) *  
*****
```

```
SIMVIB CHECK CASE 11 FOR CDC COMPUTER  
4 2-D ISOLATORS - 3 FORCES & 3 MOMENTS  
6 TRANSMISSION & 6 FUSELAGE MODES  
FREQUENCY (HZ)
```

# INPUT DECK CARD IMAGE LISTING

\*\*\*\*\*

IS1	1	0	/* FIRST ISOLATOR	*/ 0006001
1 /	1.000D+00	5.000D+00	0.0	/* CONNECTION NODES
3 /	1.250D+00	1.000D+01	0.0	/* LENGTHS A AND B (IN) */ 0008001
7 /	4.400D+01	0.0	0.0	/* MASS1 (LB) */ 0009001
12 /	1.000D+01	1.000D+09	1.000D+09	/* K TRANSM. PIVOT (LB/IN) */ 0010001
15 /	1.000D+05	1.000D+05	1.000D+05	/* K TRANSM./FUSEL. (LB/IN) */ 0011001
18 /	1.000D+09	1.000D+09	1.500D+04	/* K FUSEL. PIVOT (LB/IN) */ 0012001
21 /	0.0	0.0	0.0	/* K ROTATIONAL (IN-LB/RAD) */ 0013001
24 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM. PIVOT (ND) */ 0014001
27 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM./FUSEL. (ND) */ 0015001
30 /	5.000D-02	5.000D-02	5.000D-02	/* C FUSEL. PIVOT (ND) */ 0016001
33 /	5.000D-02	5.000D-02	5.000D-02	/* C ROTATIONAL (ND) */ 0017001
36 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS PIVOT (HZ) */ 0018001
39 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS/FUSEL (HZ) */ 0019001
42 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY FUSEL PIVOT (HZ) */ 0020001
45 /	0.0	0.0	0.0	/* FREQUENCY ROTATIONAL (HZ) */ 0021001
48 /	2.000D+00	0.0	0.0	/* TWO-DIM. ISOLATOR OPTION */ 0022001
49 /	0.0	0.0	0.0	/* RIGID ISOLATOR BAR OPTION */ 0023001
56 /	0.0	0.0	0.0	/* TRANS. EULER ANGLES (DEG) */ 0024001
-59 /	0.0	0.0	0.0	/* FUSEL. EULER ANGLES (DEG) */ 0025001

IS1	2	COPY	1	/* SECOND ISOLATOR	*/ 0027001
1 /	2.000D+00	6.000D+00	0.0	/* CONNECTION NODES	*/ 0028001
3 /	1.250D+00	1.000D+01	0.0	/* LENGTHS A AND B (IN) */ 0029001	*/ 0030001
7 /	4.400D+01	0.0	0.0	/* MASS1 (LB) */ 0030001	*/ 0031001
12 /	1.000D+01	1.000D+09	1.000D+09	/* K TRANSM. PIVOT (LB/IN) */ 0010001	*/ 0011001
15 /	1.000D+05	1.000D+05	1.000D+05	/* K TRANSM./FUSEL. (LB/IN) */ 0011001	*/ 0012001
18 /	1.000D+09	1.000D+09	1.500D+04	/* K FUSEL. PIVOT (LB/IN) */ 0012001	*/ 0013001
21 /	0.0	0.0	0.0	/* K ROTATIONAL (IN-LB/RAD) */ 0034001	*/ 0035001
24 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM. PIVOT (ND) */ 0035001	*/ 0036001
27 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM./FUSEL. (ND) */ 0036001	*/ 0037001
30 /	5.000D-02	5.000D-02	5.000D-02	/* C FUSEL. PIVOT (ND) */ 0037001	*/ 0038001
33 /	5.000D-02	5.000D-02	5.000D-02	/* C ROTATIONAL (ND) */ 0038001	*/ 0039001
36 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS PIVOT (HZ) */ 0039001	*/ 0040001
39 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS/FUSEL (HZ) */ 0040001	*/ 0041001
42 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY FUSEL PIVOT (HZ) */ 0041001	*/ 0042001
45 /	0.0	0.0	0.0	/* FREQUENCY ROTATIONAL (HZ) */ 0042001	*/ 0043001
48 /	2.000D+00	0.0	0.0	/* TWO-DIM. ISOLATOR OPTION */ 0043001	*/ 0044001
49 /	0.0	0.0	0.0	/* RIGID ISOLATOR BAR OPTION */ 0044001	*/ 0045001
56 /	0.0	0.0	9.000D+01	/* TRANS. EULER ANGLES (DEG) */ 0045001	*/ 0046001
-59 /	0.0	0.0	9.000D+01	/* FUSEL. EULER ANGLES (DEG) */ 0046001	

IS1	3	COPY	1	/* THIRD ISOLATOR	*/ 0048001
1 /	3.000D+00	7.000D+00	0.0	/* CONNECTION NODES	*/ 0049001
3 /	1.250D+00	1.000D+01	0.0	/* LENGTHS A AND B (IN) */ 0050001	*/ 0051001
7 /	4.400D+01	0.0	0.0	/* MASS1 (LB) */ 0051001	*/ 0010001
12 /	1.000D+01	1.000D+09	1.000D+09	/* K TRANSM. PIVOT (LB/IN) */ 0010001	*/ 0011001
15 /	1.000D+05	1.000D+05	1.000D+05	/* K TRANSM./FUSEL. (LB/IN) */ 0011001	*/ 0012001
18 /	1.000D+09	1.000D+09	1.500D+04	/* K FUSEL. PIVOT (LB/IN) */ 0012001	*/ 0055001
21 /	0.0	0.0	0.0	/* K ROTATIONAL (IN-LB/RAD) */ 0055001	*/ 0056001
24 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM. PIVOT (ND) */ 0056001	*/ 0057001
27 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM./FUSEL. (ND) */ 0057001	*/ 0058001
30 /	5.000D-02	5.000D-02	5.000D-02	/* C FUSEL. PIVOT (ND) */ 0058001	*/ 0059001
33 /	5.000D-02	5.000D-02	5.000D-02	/* C ROTATIONAL (ND) */ 0059001	*/ 0060001
36 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS PIVOT (HZ) */ 0060001	*/ 0061001
39 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS/FUSEL (HZ) */ 0061001	

42 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY FUSEL PIVOT (HZ) */	0062001
45 /	0.0	0.0	0.0	/* FREQUENCY ROTATIONAL (HZ) */	0063001
48 /	2.000D+00	0.0	0.0	/* TWO-DIM. ISOLATOR OPTION	0064001
49 /	0.0	0.0	0.0	/* RIGID ISOLATOR BAR OPTION	0065001
56 /	0.0	0.0	1.800D+02	/* TRANS. EULER ANGLES (DEG) */	0066001
-59 /	0.0	0.0	1.800D+02	/* FUSEL. EULER ANGLES (DEG) */	0067001

IS1	4	COPY	1	/* FOURTH ISOLATOR	0069001
1 /	4.000D+00	8.000D+00	0.0	/* CONNECTION NODES	0070001
3 /	1.250D+00	1.000D+01	0.0	/* LENGTHS A AND B (IN) */	0071001
7 /	4.400D+01	0.0	0.0	/* MASS1 (LB) */	0072001
12 /	1.000D+01	1.000D+09	1.000D+09	/* K TRANSM. PIVOT (LB/IN) */	0010001
15 /	1.000D+05	1.000D+05	1.000D+05	/* K TRANSM./FUSEL. (LB/IN) */	0011001
18 /	1.000D+09	1.000D+09	1.500D+04	/* K FUSEL. PIVOT (LB/IN) */	0012001
21 /	0.0	0.0	0.0	/* K ROTATIONAL (IN-LB/RAD) */	0076001
24 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM. PIVOT (ND) */	0077001
27 /	5.000D-02	5.000D-02	5.000D-02	/* C TRANSM./FUSEL. (ND) */	0078001
30 /	5.000D-02	5.000D-02	5.000D-02	/* C FUSEL. PIVOT (ND) */	0079001
33 /	5.000D-02	5.000D-02	5.000D-02	/* C ROTATIONAL (ND) */	0080001
36 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS PIVOT (HZ) */	0081001
39 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY TRANS/FUSEL (HZ) */	0082001
42 /	2.480D+01	2.480D+01	2.480D+01	/* FREQUENCY FUSEL PIVOT (HZ) */	0083001
45 /	0.0	0.0	0.0	/* FREQUENCY ROTATIONAL (HZ) */	0084001
48 /	2.000D+00	0.0	0.0	/* TWO-DIM. ISOLATOR OPTION	0085001
49 /	0.0	0.0	0.0	/* RIGID ISOLATOR BAR OPTION	0086001
56 /	0.0	0.0	2.700D+02	/* TRANS. EULER ANGLES (DEG) */	0087001
-59 /	0.0	0.0	2.700D+02	/* FUSEL. EULER ANGLES (DEG) */	0088001

MS1	5	0	/* FUSELAGE FIRST MODE SHAPE	0090001	
1 /	1.000D-02	0.0	0.0	/* DAMPING RATIO (ND) */	0091001
2 /	3.800D+01	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0092001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0093001
4 /	4.000D+00	0.0	0.0	/* NUMBER OF NODES	0094001
5 /	5.000D+00	6.000D+00	7.000D+00	/* NODE NUMBER(S) */	0095001
8 /	8.000D+00	0.0	0.0	/* NODE NUMBER(S) */	0096001
10 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE5 (X-Z) */	0097001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE5(TX-TZ) */	0098001
16 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE6 (X-Z) */	0099001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE6(TX-TZ) */	0100001
22 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE7 (X-Z) */	0101001
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE7(TX-TZ) */	0102001
28 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE8 (X-Z) */	0103001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE8(TX-TZ) */	0104001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0105001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0106001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0107001
-49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0108001

MS1	6	COPY	5	/* FUSELAGE SECOND MODE	0110001
1 /	1.000D-02	0.0	0.0	/* DAMPING RATIO (ND) */	0111001
2 /	3.800D+01	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0112001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0113001
4 /	4.000D+00	0.0	0.0	/* NUMBER OF NODES	0114001
5 /	5.000D+00	6.000D+00	7.000D+00	/* NODE NUMBER(S) */	0115001
8 /	8.000D+00	0.0	0.0	/* NODE NUMBER(S) */	0116001
10 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE5 (X-Z) */	0117001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE5(TX-TZ) */	0118001
16 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE6 (X-Z) */	0119001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE6(TX-TZ) */	0120001
22 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE7 (X-Z) */	0121001

40

25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE7(TX-TZ) */	0122001
28 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE8 (X-Z) */	0123001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE8(TX-TZ) */	0124001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0125001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0126001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0127001
-49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0128001

MS1	7	COPY	5	/* FUSELAGE THIRD MODE	*/	0130001
1 /	1.000D-02	0.0	0.0	/* DAMPING RATIO (ND)	*/	0131001
2 /	3.800D+01	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN)	*/	0132001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ)	*/	0133001
4 /	4.000D+00	0.0	0.0	/* NUMBER OF NODES	*/	0134001
5 /	5.000D+00	6.000D+00	7.000D+00	/* NODE NUMBER(S)	*/	0135001
8 /	8.000D+00	0.0	0.0	/* NODE NUMBER(S)	*/	0136001
10 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE5 (X-Z)	*/	0137001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE5(TX-TZ)	*/	0138001
16 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE6 (X-Z)	*/	0139001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE6(TX-TZ)	*/	0140001
22 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE7 (X-Z)	*/	0141001
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE7(TX-TZ)	*/	0142001
28 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE8 (X-Z)	*/	0143001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE8(TX-TZ)	*/	0144001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG)	*/	0145001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG)	*/	0146001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG)	*/	0147001
-49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG)	*/	0148001

MS1	8	COPY	5	/* FUSELAGE FOURTH MODE	*/	0150001
1 /	1.000D-02	0.0	0.0	/* DAMPING RATIO (ND)	*/	0151001
2 /	4.500D+04	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN)	*/	0152001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ)	*/	0153001
4 /	4.000D+00	0.0	0.0	/* NUMBER OF NODES	*/	0154001
5 /	5.000D+00	6.000D+00	7.000D+00	/* NODE NUMBER(S)	*/	0155001
8 /	8.000D+00	0.0	0.0	/* NODE NUMBER(S)	*/	0156001
10 /	0.0	-1.730D+01	0.0	/* MODE SHAPE AT NODE5 (X-Z)	*/	0157001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE5(TX-TZ)	*/	0158001
16 /	0.0	-1.730D+01	-8.000D+00	/* MODE SHAPE AT NODE6 (X-Z)	*/	0159001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE6(TX-TZ)	*/	0160001
22 /	0.0	-1.730D+01	0.0	/* MODE SHAPE AT NODE7 (X-Z)	*/	0161001
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE7(TX-TZ)	*/	0162001
28 /	0.0	-1.730D+01	-8.000D+00	/* MODE SHAPE AT NODE8 (X-Z)	*/	0163001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE8(TX-TZ)	*/	0164001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG)	*/	0165001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG)	*/	0166001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG)	*/	0167001
-49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG)	*/	0168001

MS1	9	COPY	5	/* FUSELAGE FIFTH MODE	*/	0170001
1 /	1.000D-02	0.0	0.0	/* DAMPING RATIO (ND)	*/	0171001
2 /	4.650D+05	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN)	*/	0172001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ)	*/	0173001
4 /	4.000D+00	0.0	0.0	/* NUMBER OF NODES	*/	0174001
5 /	5.000D+00	6.000D+00	7.000D+00	/* NODE NUMBER(S)	*/	0175001
8 /	8.000D+00	0.0	0.0	/* NODE NUMBER(S)	*/	0176001
10 /	1.730D+01	0.0	8.000D+00	/* MODE SHAPE AT NODE5 (X-Z)	*/	0177001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE5(TX-TZ)	*/	0178001
16 /	1.730D+01	0.0	0.0	/* MODE SHAPE AT NODE6 (X-Z)	*/	0179001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE6(TX-TZ)	*/	0180001
22 /	1.730D+01	0.0	-8.000D+00	/* MODE SHAPE AT NODE7 (X-Z)	*/	0181001



25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE7(TX-TZ) */	0182001
28 /	1.730D+01	0.0	0.0	/* MODE SHAPE AT NODE8 (X-Z) */	0183001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE8(TX-TZ) */	0184001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0185001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0186001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0187001
-49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0188001

MS1	10	COPY	5	/* FUSELAGE SIXTH MODE	0190001
1 /	1.000D-02	0.0	0.0	/* DAMPING RATIO (ND) */	0191001
2 /	4.540D+05	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0192001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0193001
4 /	4.000D+00	0.0	0.0	/* NUMBER OF NODES	0194001
5 /	5.000D+00	6.000D+00	7.000D+00	/* NODE NUMBER(S)	0195001
8 /	8.000D+00	0.0	0.0	/* NODE NUMBER(S)	0196001
10 /	0.0	-8.000D+00	0.0	/* MODE SHAPE AT NODE5 (X-Z) */	0197001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE5(TX-TZ) */	0198001
16 /	8.000D+00	0.0	0.0	/* MODE SHAPE AT NODE6 (X-Z) */	0199001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE6(TX-TZ) */	0200001
22 /	0.0	-8.000D+00	0.0	/* MODE SHAPE AT NODE7 (X-Z) */	0201001
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE7(TX-TZ) */	0202001
28 /	-8.000D+00	0.0	0.0	/* MODE SHAPE AT NODE8 (X-Z) */	0203001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE8(TX-TZ) */	0204001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0205001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0206001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0207001
-49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0208001

MS1	11	COPY	5	/* TRANSMISSION FIRST MODE	0210001
1 /	1.000D-02	0.0	0.0	/* DAMPING RATIO (ND) */	0211001
2 /	5.500D+00	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0212001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0213001
4 /	5.000D+00	0.0	0.0	/* NUMBER OF NODES	0214001
5 /	1.000D+00	2.000D+00	3.000D+00	/* NODE NUMBER(S)	0215001
8 /	4.000D+00	9.000D+00	0.0	/* NODE NUMBER(S)	0216001
10 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE1 (X-Z) */	0217001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE1(TX-TZ) */	0218001
16 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE2 (X-Z) */	0219001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE2(TX-TZ) */	0220001
22 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE3 (X-Z) */	0221001
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0222001
28 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE4 (X-Z) */	0223001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE4(TX-TZ) */	0224001
34 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0225001
37 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0226001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0227001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0228001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0229001
49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0230001
-52 /	0.0	0.0	0.0	/* EULER ANGLES NODE9 (DEG) */	0231001

MS1	12	COPY	11	/* TRANSMISSION SECOND MODE	0233001
1 /	0.0	0.0	0.0	/* DAMPING RATIO (ND) */	0234001
2 /	5.500D+00	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0235001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0236001
4 /	5.000D+00	0.0	0.0	/* NUMBER OF NODES	0237001
5 /	1.000D+00	2.000D+00	3.000D+00	/* NODE NUMBER(S)	0238001
8 /	4.000D+00	9.000D+00	0.0	/* NODE NUMBER(S)	0239001
10 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE1 (X-Z) */	0240001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE1(TX-TZ) */	0241001

42	16 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE2 (X-Z) */	0242001
	19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE2(TX-TZ) */	0243001
	22 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE3 (X-Z) */	0244001
	25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0245001
	28 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE4 (X-Z) */	0246001
	31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE4(TX-TZ) */	0247001
	34 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0248001
	37 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0249001
	40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0250001
	43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0251001
	46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0252001
	49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0253001
	-52 /	0.0	0.0	0.0	/* EULER ANGLES NODE9 (DEG) */	0254001
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MS1	13	COPY	11	/* TRANSMISSION THIRD MODE */	0256001	
1 /	0.0	0.0	0.0	/* DAMPING RATIO (ND) */	0257001	
2 /	5.500D+00	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0258001	
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0259001	
4 /	5.000D+00	0.0	0.0	/* NUMBER OF NODES	0260001	
5 /	1.000D+00	2.000D+00	3.000D+00	/* NODE NUMBER(S)	0261001	
8 /	4.000D+00	9.000D+00	0.0	/* NODE NUMBER(S)	0262001	
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10 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE2 (X-Z) */	0263001	
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE2(TX-TZ) */	0264001	
16 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE3 (X-Z) */	0265001	
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0266001	
22 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE3 (X-Z) */	0267001	
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0268001	
28 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE4 (X-Z) */	0269001	
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE4(TX-TZ) */	0270001	
34 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE9(TX-TZ) */	0271001	
37 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0272001	
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0273001	
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0274001	
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0275001	
49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0276001	
-52 /	0.0	0.0	0.0	/* EULER ANGLES NODE9 (DEG) */	0277001	
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MS1	14	COPY	11	/* TRANSMISSION FOURTH MODE */	0279001	
1 /	0.0	0.0	0.0	/* DAMPING RATIO (ND) */	0280001	
2 /	2.980D+03	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0281001	
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0282001	
4 /	5.000D+00	0.0	0.0	/* NUMBER OF NODES	0283001	
5 /	1.000D+00	2.000D+00	3.000D+00	/* NODE NUMBER(S)	0284001	
8 /	4.000D+00	9.000D+00	0.0	/* NODE NUMBER(S)	0285001	
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10 /	0.0	6.800D+00	0.0	/* MODE SHAPE AT NODE2 (X-Z) */	0286001	
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE2(TX-TZ) */	0287001	
16 /	0.0	6.800D+00	-8.000D+00	/* MODE SHAPE AT NODE3 (X-Z) */	0288001	
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0289001	
22 /	0.0	6.800D+00	0.0	/* MODE SHAPE AT NODE3 (X-Z) */	0290001	
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0291001	
28 /	0.0	6.800D+00	8.000D+00	/* MODE SHAPE AT NODE4 (X-Z) */	0292001	
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE4(TX-TZ) */	0293001	
34 /	0.0	-1.870D+01	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0294001	
37 /	1.000D+00	0.0	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0295001	
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0296001	
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0297001	
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0298001	
49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0299001	
-52 /	0.0	0.0	0.0	/* EULER ANGLES NODE9 (DEG) */	0300001	

MS1	15	COPY	11	/* TRANSMISSION FIFTH MODE */	0302001
1 /	0.0	0.0	0.0	/* DAMPING RATIO (ND) */	0303001
2 /	3.870D+03	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0304001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0305001
4 /	5.000D+00	0.0	0.0	/* NUMBER OF NODES	0306001
5 /	1.000D+00	2.000D+00	3.000D+00	/* NODE NUMBER(S)	0307001
8 /	4.000D+00	9.000D+00	0.0	/* NODE NUMBER(S)	0308001
10 /	-6.800D+00	0.0	8.000D+00	/* MODE SHAPE AT NODE2 (X-Z) */	0309001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE2(TX-TZ) */	0310001
16 /	-6.800D+00	0.0	0.0	/* MODE SHAPE AT NODE3 (X-Z) */	0311001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0312001
22 /	-6.800D+00	0.0	-8.000D+00	/* MODE SHAPE AT NODE3 (X-Z) */	0313001
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0314001
28 /	-6.800D+00	0.0	0.0	/* MODE SHAPE AT NODE4 (X-Z) */	0315001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE4(TX-TZ) */	0316001
34 /	1.870D+01	0.0	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0317001
37 /	0.0	1.000D+00	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0318001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0319001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0320001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0321001
49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0322001
-52 /	0.0	0.0	0.0	/* EULER ANGLES NODE9 (DEG) */	0323001
MS1	16	COPY	11	/* TRANSMISSION SIXTH MODE */	0325001
1 /	0.0	0.0	0.0	/* DAMPING RATIO (ND) */	0326001
2 /	2.500D+03	0.0	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0327001
3 /	0.0	0.0	0.0	/* FREQUENCY (HZ) */	0328001
4 /	5.000D+00	0.0	0.0	/* NUMBER OF NODES	0329001
5 /	1.000D+00	2.000D+00	3.000D+00	/* NODE NUMBER(S)	0330001
8 /	4.000D+00	9.000D+00	0.0	/* NODE NUMBER(S)	0331001
10 /	0.0	-8.000D+00	0.0	/* MODE SHAPE AT NODE2 (X-Z) */	0332001
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE2(TX-TZ) */	0333001
16 /	8.000D+00	0.0	0.0	/* MODE SHAPE AT NODE3 (X-Z) */	0334001
19 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0335001
22 /	0.0	8.000D+00	0.0	/* MODE SHAPE AT NODE3 (X-Z) */	0336001
25 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE3(TX-TZ) */	0337001
28 /	-8.000D+00	0.0	0.0	/* MODE SHAPE AT NODE4 (X-Z) */	0338001
31 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE4(TX-TZ) */	0339001
34 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE9(TX-TZ) */	0340001
37 /	0.0	0.0	1.000D+00	/* MODE SHAPE AT NODE9(TX-TZ) */	0341001
40 /	0.0	0.0	0.0	/* EULER ANGLES NODE5 (DEG) */	0342001
43 /	0.0	0.0	0.0	/* EULER ANGLES NODE6 (DEG) */	0343001
46 /	0.0	0.0	0.0	/* EULER ANGLES NODE7 (DEG) */	0344001
49 /	0.0	0.0	0.0	/* EULER ANGLES NODE8 (DEG) */	0345001
-52 /	0.0	0.0	0.0	/* EULER ANGLES NODE9 (DEG) */	0346001
FR1	17		0	/* INPUT FORCING FREQUENCY	0062002
1 /	2.480D+01	0.0	0.0	/* FREQUENCY (4P) (HZ) */	0063002
2 /	0.0	0.0	0.0	/* DEBUG SWITCH (NO=0,YES=1) */	0064002
-3 /	1.000D+00	0.0	0.0	/* RESULTS IN G'S	0064002
GF1	18		0	/* INPUT GENERALIZED FORCE	0066002
1 /	9.000D+00	0.0	0.0	/* NODE NUMBER	0067002
2 /	0.0	0.0	0.0	/* EULER ANGLES (DEG)	0068002
5 /	5.000D+02	0.0	5.000D+02	/* FORCES (CX,SX,CY,SY,CZ,SZ) */	0069002
8 /	0.0	5.000D+02	0.0	/* " (LBS) */	0070002
11 /	2.000D+04	0.0	2.000D+04	/* MOMENTS(CX,SX,CY,SY,CZ,SZ) */	0071002
-14 /	0.0	2.000D+04	0.0	/* " (IN-LB) */	0072002
PV1	19		0	/* PARAMETRIC VARIATION	0074002

1 / 5.000D+00 0.0 0.0 /\* STARTING VALUE (HZ) \*/ 0362002  
 2 / 5.000D+01 0.0 0.0 /\* END VALUE (HZ) \*/ 0363002  
 3 / 2.000D+00 0.0 0.0 /\* NUMBER OF POINTS \*/ 0364002  
 -4 / 1.700D+01 1.000D+00 0.0 /\* ELEMENT NUMBER AND LOCATION \*/ 0365002

44

GEN 20 0 /\* GENERAL ELEMENT \*/ 0370332  
 1 / 0.0 0.0 0.0 /\* SUPPRESS FINAL RESULTS \*/ 0370342  
 2 / 1.000D+00 0.0 0.0 /\* DO NOT SUPPRESS INPUT LISTS \*/ 0370352  
 -10 / 4.400D+01 0.0 0.0 /\* VALUE FOR 3-D PLOTS- MASS1 \*/ 0370362  
 STOP

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 5

1 ZETA DAMPING RATIO (ND) 1.000000-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 3.800000+01

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 4

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

5 6 7 8 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	1.00000+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2	1.00000+00	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	1.00000+00	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	1.00000+00	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

6

46 1 ZETA DAMPING RATIO (ND) 1.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 5.80000D+01

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 4

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

	5	6	7	8	0
5					

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	1.0000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2	0.0	1.0000D+00	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	1.0000D+00	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	1.0000D+00	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 7

1 ZETA DAMPING RATIO (ND) 1.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 3.80000D+01

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 4

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

5 6 7 8 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	0.0	1.0000D+00	0.0	0.0	0.0	
16 - 21	NODE 2	0.0	0.0	1.0000D+00	0.0	0.0	0.0	
22 - 27	NODE 3	0.0	0.0	1.0000D+00	0.0	0.0	0.0	
28 - 33	NODE 4	0.0	0.0	1.0000D+00	0.0	0.0	0.0	
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0	

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

			THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

8

48 1 ZETA DAMPING RATIO (NO) 1.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 4.50000D+04

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 4

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

5 6 7 8 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	-1.7300D+01	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2	0.0	-1.7300D+01	-8.0000D+00	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	-1.7300D+01	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	-1.7300D+01	-8.0000D+00	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

			THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0



COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 9

1 ZETA DAMPING RATIO (ND) 1.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 4.65000D+05

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 4

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

5 6 7 8 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	1.7300D+01	0.0	8.0000D+00	0.0	0.0	0.0
16 - 21	NODE 2	1.7300D+01	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	1.7300D+01	0.0	-8.0000D+00	0.0	0.0	0.0
28 - 33	NODE 4	1.7300D+01	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 10

5 1 ZETA DAMPING RATIO (ND) 1.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 4.54000D+05

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 4

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

5 6 7 8 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	-8.0000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2	8.0000D+00	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	-8.0000D+00	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	-8.0000D+00	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 11

1 ZETA DAMPING RATIO (ND)

1.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN)

5.50000D+00

3 OMEGA MODE FREQUENCY (HERTZ)

0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE

5

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 2 3 4 9

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1		1.0000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2		1.0000D+00	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3		1.0000D+00	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4		1.0000D+00	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5		1.0000D+00	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

			THETA	PHI	XSI
40 - 42	NODE 1		0.0	0.0	0.0
43 - 45	NODE 2		0.0	0.0	0.0
46 - 48	NODE 3		0.0	0.0	0.0
49 - 51	NODE 4		0.0	0.0	0.0
52 - 54	NODE 5		0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN)

0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC)

0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 12

52

1 ZETA DAMPING RATIO (ND) 0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 5.50000D+00

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 5

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 2 3 4 9

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	1.0000D+00	0.0	0.0	0.0	0.0
16 - 21	NODE 2	0.0	1.0000D+00	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	1.0000D+00	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	1.0000D+00	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	1.0000D+00	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 13

1 ZETA DAMPING RATIO (ND)

0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN)

5.50000D+00

3 OMEGA MODE FREQUENCY (HERTZ)

0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE

5

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 2 3 4 9

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	0.0	1.0000D+00	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	1.0000D+00	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	1.0000D+00	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	1.0000D+00	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	1.0000D+00	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN)

0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC)

0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 14

54 1 ZETA DAMPING RATIO (NO) 0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 2.98000D+03

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 5

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

		1	2	3	4	9		
10	GAMMA	MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:						
			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	6.8000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2	0.0	6.8000D+00	-8.0000D+00	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	6.8000D+00	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	6.8000D+00	8.0000D+00	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	-1.8700D+01	0.0	1.0000D+00	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 15

1 ZETA DAMPING RATIO (ND)

0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN)

3.87000D+03

3 OMEGA MODE FREQUENCY (HERTZ)

0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE

5

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 2 3 4 9

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	-6.8000D+00	0.0	8.0000D+00	0.0	0.0	0.0
16 - 21	NODE 2	-6.8000D+00	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	-6.8000D+00	0.0	-8.0000D+00	0.0	0.0	0.0
28 - 33	NODE 4	-6.8000D+00	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	1.8700D+01	0.0	0.0	0.0	1.0000D+00	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN)

0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC)

0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 16

95 1 ZETA DAMPING RATIO (ND) 0.0

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 2.50000D+03

3 OMEGA MODE FREQUENCY (HERTZ) 0.0

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 5

5 NNODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

	1	2	3	4	9
10 - 15	1	2	3	4	9

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	-8.0000D+00	0.0	0.0	0.0	0.0
16 - 21	NODE 2	8.0000D+00	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	8.0000D+00	0.0	0.0	0.0	0.0
28 - 33	NODE 4	-8.0000D+00	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	1.0000D+00

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0



COMPONENT:FORCER1

\*\*\*\*\* FORCED RESPONSE SOLUTION TYPE 1 \*\*\*\*\*

ELEMENT: 17

1 OMEGA FORCING FREQUENCY (HERTZ)

2.48000D+01

2 IDEBUG DEBUG SELECTOR

0

= 0 ==> NO DEBUG PRINTOUT

= 1 ==> TRACE MATRIX ASSEMBLY AND SOLUTION

3 ICONVG OUTPUT DISPLAY SELECTOR

1

= 0 ==> DISPLACEMENTS (FEET)

= 1 ==> ACCELERATIONS (G'S)

COMPONENT: GENFOR1

\*\*\*\*\* GENERALIZED FORCE TYPE 1 (USED WITH FORCER1) \*\*\*\*\*

ELEMENT: 18

50

1	NCN	CONNECTION NODE NUMBER (NO)	9
2	THETA	EULER PITCH ANGLE (DEGREES) - ROTATE SECOND ABOUT THE Y-AXIS	0.0
3	PHI	EULER ROLL ANGLE (DEGREES) - ROTATE THIRD ABOUT THE X-AXIS	0.0
4	XSI	EULER YAW ANGLE (DEGREES) - ROTATE FIRST ABOUT THE Z-AXIS	0.0
5	FXCOS	COSINE COMPONENT OF X DIRECTION FORCE (LB)	5.00000D+02
6	FXSIN	SINE COMPONENT OF X DIRECTION FORCE (LB)	0.0
7	FYCOS	COSINE COMPONENT OF Y DIRECTION FORCE (LB)	5.00000D+02
8	FYSIN	SINE COMPONENT OF Y DIRECTION FORCE (LB)	0.0
9	FZCOS	COSINE COMPONENT OF Z DIRECTION FORCE (LB)	5.00000D+02
10	FZSIN	SINE COMPONENT OF Z DIRECTION FORCE (LB)	0.0
11	FT1COS	COSINE COMPONENT OF THETA 1 MOMENT (LB)	2.00000D+04
12	FT1SIN	SINE COMPONENT OF THETA 1 MOMENT (IN-LB)	0.0
13	FT2COS	COSINE COMPONENT OF THETA 2 MOMENT (IN-LB)	2.00000D+04
14	FT2SIN	SINE COMPONENT OF THETA 2 MOMENT (IN-LB)	0.0
15	FT3COS	COSINE COMPONENT OF THETA 3 MOMENT (IN-LB)	2.00000D+04
16	FT3SIN	SINE COMPONENT OF THETA 3 MOMENT (IN-LB)	0.0
17	IHRESP	HHC FLAG = 0 HHC NOT ACTIVE = 1 HHC ACTIVE	0
18	WZX	WEIGHT FOR X RESPONSE	0.0
19	WZY	WEIGHT FOR Y RESPONSE	0.0
20	WZZ	WEIGHT FOR Z RESPONSE	0.0
21	WZX	WEIGHT FOR THETA1 RESPONSE	0.0
22	WZY	WEIGHT FOR THETA2 RESPONSE	0.0
23	WZZ	WEIGHT FOR THETA3 RESPONSE	0.0

COMPONENT:PARMV1

\*\*\*\*\* PARAMETRIC VARIATION TYPE 1 \*\*\*\*\*

ELEMENT: 19

1 FIRSTV STARTING VALUE FOR PARAMETRIC VARIATION 5.00000D+00  
 2 FINALV FINAL VALUE FOR PARAMETRIC VARIATION 5.00000D+01  
 3 NPTS NUMBER OF POINTS IN PARAMETRIC VARIATION 19  
 4 NEL GLOBAL ELEMENT NUMBER AND CORRESPONDING LOADER LOCATION FOR INDEPENDENT VARIABLE  
 TO BE PARAMETRICALLY VARIED (UP TO 10 PAIRS)

17	1
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

COMPONENT:GENINPUT

\*\*\*\*\* GENERAL INPUT FOR PROGRAM CONTROL \*\*\*\*\*

ELEMENT: 20

1 ICNTL1 PRINT SELECTOR FOR FINAL RESULTS 0  
 = 0 ==> SUPPRESS LINE PRINTER OUTPUT  
 = 1 ==> FULL LINE PRINTER OUTPUT  
 2 ICNTL2 PRINT SELECTOR FOR COMPONENT INPUTS 1  
 = 0 ==> SUPPRESS LINE PRINTER OUTPUT  
 = 1 ==> FULL LINE PRINTER OUTPUT  
 3-9 ----- OPEN LOCATIONS FOR FUTURE USE  
 10 XINDEP INDEPENDENT VARIABLE FOR 3-D PLOTS 4.40000D+01

COMPONENT:ISOLATE1

\*\*\*\*\* ISOLATOR TYPE 1 \*\*\*\*\*

ELEMENT: 1

1	NCN1	CONNECTION NODE NUMBER 1	(ND)	1
2	NCN2	CONNECTION NODE NUMBER 2	(ND)	5
3	AL	DISTANCE BETWEEN NODE 1 & PIVOT 2	(IN)	1.25000D+00
4	BL	DISTANCE BETWEEN PIVOT 2 & Y-Z ISOLATOR	(IN)	1.00000D+01
5	CL	DISTANCE BETWEEN PIVOT 2 & NODE 2	(IN)	0.0
6	DL	DISTANCE BETWEEN PIVOT 2 & X ISOLATOR	(IN)	0.0
7	W1	WEIGHT OF Y-Z ISOLATOR	(LBS)	4.40000D+01
8	XI1Y	INERTIA OF Y-Z ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
9	XI1Z	INERTIA OF Y-Z ISOLATOR ABOUT THE Z-AXIS	(IN-LB-SEC**2)	0.0
10	W2	WEIGHT OF X ISOLATOR	(LBS)	0.0
11	XI2Y	INERTIA OF X ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
12	TKTX	X STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+01
13	TKTY	Y STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
14	TKTZ	Z STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
15	TKEX	X STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
16	TKEY	Y STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
17	TKEZ	Z STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
18	TKAX	X STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
19	TKAY	Y STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
20	TKAZ	Z STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.50000D+04
21	RKTHB	ROTATIONAL STIFFNESS OF NODE 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
22	RKTHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
23	RKPHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Z-AXIS	(IN-LB/RAD)	0.0
24	TCTX	X DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
25	TCTY	Y DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
26	TCTZ	Z DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
27	TCEX	X DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
28	TCEY	Y DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02

IBM Z30687

29	TCEZ	Z DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
30	TCAX	X DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
31	TCAY	Y DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
32	TCAZ	Z DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
33	RCTHB	ROTATIONAL DAMPING OF NODE 2 ABOUT THE Y-AXIS	(ND)	5.00000D-02
34	RCTHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Y-AXIS	(ND)	5.00000D-02
35	RCPHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Z-AXIS	(ND)	5.00000D-02
36	WTX	X FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
37	WTY	Y FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
38	WTZ	Z FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
39	WEX	X FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
40	WEY	Y FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
41	WEZ	Z FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
42	WAX	X FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
43	WAY	Y FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
44	WAZ	Z FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
45	RCTHB	ROTATIONAL FREQUENCY OF NODE 2 ABOUT THE Y-AXIS	(HZ)	0.0
46	RCTHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Y-AXIS	(HZ)	0.0
47	RCPHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Z-AXIS	(HZ)	0.0
48	I3D2D	CONTROL SWITCH ==> 2 FOR 2-D DAVI & ==> 3 FOR 3-D DAVI ISOLATOR	(ND)	2
49	IFLEX	ACCOUNT FOR FLEXIBILITY OF ISOLATOR BARS ==>0 - NO & ==>1 - YES	(ND)	0
50	RXYM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
51	RXZM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
52	RXZM2	FREQUENCY RATIO OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
53	DXYM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
54	DXZM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
55	DXZM2	CRITICAL DAMPING OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
56	THETA1	EULER PITCH ANGLE AT END 1 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
57	PHI1	EULER ROLL ANGLE AT END 1 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
58	XSI1	EULER YAW ANGLE AT END 1 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	0.0

59	THETA2	EULER PITCH ANGLE AT END 2 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
60	PHI2	EULER ROLL ANGLE AT END 2 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
61	XSI2	EULER YAW ANGLE AT END 2 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	0.0
62	XT	PIVOT 1 INITIAL X DISPLACEMENT	(INCH)	0.0
63	DXT	PIVOT 1 INITIAL X VELOCITY	(IN/SEC)	0.0
64	YT	PIVOT 1 INITIAL Y DISPLACEMENT	(INCH)	0.0
65	DYT	PIVOT 1 INITIAL Y VELOCITY	(IN/SEC)	0.0
66	ZT	PIVOT 1 INITIAL Z DISPLACEMENT	(INCH)	0.0
67	DZT	PIVOT 1 INITIAL Z VELOCITY	(IN/SEC)	0.0
68	XB	PIVOT 2 INITIAL X DISPLACEMENT	(INCH)	0.0
69	DXB	PIVOT 2 INITIAL X VELOCITY	(IN/SEC)	0.0
70	YB	PIVOT 2 INITIAL Y DISPLACEMENT	(INCH)	0.0
71	DYB	PIVOT 2 INITIAL Y VELOCITY	(IN/SEC)	0.0
72	ZB	PIVOT 2 INITIAL Z DISPLACEMENT	(INCH)	0.0
73	DZB	PIVOT 2 INITIAL Z VELOCITY	(IN/SEC)	0.0

COMPONENT: ISOLATE1

\*\*\*\*\* ISOLATOR TYPE 1 \*\*\*\*\*

ELEMENT: 2

1	NCN1	CONNECTION NODE NUMBER 1	(ND)	2
2	NCN2	CONNECTION NODE NUMBER 2	(ND)	6
3	AL	DISTANCE BETWEEN NODE 1 & PIVOT 2	(IN)	1.25000D+00
4	BL	DISTANCE BETWEEN PIVOT 2 & Y-Z ISOLATOR	(IN)	1.00000D+01
5	CL	DISTANCE BETWEEN PIVOT 2 & NODE 2	(IN)	0.0
6	DL	DISTANCE BETWEEN PIVOT 2 & X ISOLATOR	(IN)	0.0
7	W1	WEIGHT OF Y-Z ISOLATOR	(LBS)	4.40000D+01
8	XI1Y	INERTIA OF Y-Z ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
9	XI1Z	INERTIA OF Y-Z ISOLATOR ABOUT THE Z-AXIS	(IN-LB-SEC**2)	0.0
10	W2	WEIGHT OF X ISOLATOR	(LBS)	0.0
11	XI2Y	INERTIA OF X ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
12	TKTX	X STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+01
13	TKTY	Y STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
14	TKTZ	Z STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
15	TKEX	X STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
16	TKEY	Y STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
17	TKEZ	Z STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
18	TKAX	X STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
19	TKAY	Y STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
20	TKAZ	Z STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.50000D+04
21	RKTHB	ROTATIONAL STIFFNESS OF NODE 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
22	RKTHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
23	RKPHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Z-AXIS	(IN-LB/RAD)	0.0
24	TCTX	X DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
25	TCTY	Y DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
26	TCTZ	Z DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
27	TCEX	X DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
28	TCEY	Y DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02

29	TCEZ	Z DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
30	TCAX	X DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
31	TCAY	Y DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
32	TCAZ	Z DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
33	RCTHB	ROTATIONAL DAMPING OF NODE 2 ABOUT THE Y-AXIS	(ND)	5.00000D-02
34	RCTHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Y-AXIS	(ND)	5.00000D-02
35	RCPHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Z-AXIS	(ND)	5.00000D-02
36	NTX	X FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
37	NTY	Y FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
38	NTZ	Z FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
39	WEX	X FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
40	WEY	Y FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
41	WEZ	Z FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
42	MAX	X FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
43	WAY	Y FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
44	WAZ	Z FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
45	RCTHB	ROTATIONAL FREQUENCY OF NODE 2 ABOUT THE Y-AXIS	(HZ)	0.0
46	RCTHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Y-AXIS	(HZ)	0.0
47	RCPHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Z-AXIS	(HZ)	0.0
48	I3D2D	CONTROL SWITCH ==> 2 FOR 2-D DAVI & ==> 3 FOR 3-D DAVI ISOLATOR	(ND)	2
49	IFLEX	ACCOUNT FOR FLEXIBILITY OF ISOLATOR BARS ==>0 - NO & ==>1 - YES	(ND)	0
50	RXYM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
51	RXZM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
52	RXZM2	FREQUENCY RATIO OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
53	DXYM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
54	DXZM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
55	DXZM2	CRITICAL DAMPING OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
56	THETA1	EULER PITCH ANGLE AT END 1 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
57	PHI1	EULER ROLL ANGLE AT END 1 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
58	XSI1	EULER YAW ANGLE AT END 1 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	9.00000D+01



59	THETA2	EULER PITCH ANGLE AT END 2 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
60	PHI2	EULER ROLL ANGLE AT END 2 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
61	XSI2	EULER YAW ANGLE AT END 2 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	9.00000D+01
62	XT	PIVOT 1 INITIAL X DISPLACEMENT	(INCH)	0.0
63	DXT	PIVOT 1 INITIAL X VELOCITY	(IN/SEC)	0.0
64	YT	PIVOT 1 INITIAL Y DISPLACEMENT	(INCH)	0.0
65	DYT	PIVOT 1 INITIAL Y VELOCITY	(IN/SEC)	0.0
66	ZT	PIVOT 1 INITIAL Z DISPLACEMENT	(INCH)	0.0
67	DZT	PIVOT 1 INITIAL Z VELOCITY	(IN/SEC)	0.0
68	XB	PIVOT 2 INITIAL X DISPLACEMENT	(INCH)	0.0
69	DXB	PIVOT 2 INITIAL X VELOCITY	(IN/SEC)	0.0
70	YB	PIVOT 2 INITIAL Y DISPLACEMENT	(INCH)	0.0
71	DYB	PIVOT 2 INITIAL Y VELOCITY	(IN/SEC)	0.0
72	ZB	PIVOT 2 INITIAL Z DISPLACEMENT	(INCH)	0.0
73	DZB	PIVOT 2 INITIAL Z VELOCITY	(IN/SEC)	0.0

COMPONENT:ISOLATE1

\*\*\*\*\* ISOLATOR TYPE 1 \*\*\*\*\*

ELEMENT: 3

99	1	NCN1	CONNECTION NODE NUMBER 1	(ND)	3
	2	NCN2	CONNECTION NODE NUMBER 2	(ND)	7
	3	AL	DISTANCE BETWEEN NODE 1 & PIVOT 2	(IN)	1.25000D+00
	4	BL	DISTANCE BETWEEN PIVOT 2 & Y-Z ISOLATOR	(IN)	1.00000D+01
	5	CL	DISTANCE BETWEEN PIVOT 2 & NODE 2	(IN)	0.0
	6	DL	DISTANCE BETWEEN PIVOT 2 & X ISOLATOR	(IN)	0.0
	7	W1	WEIGHT OF Y-Z ISOLATOR	(LBS)	4.40000D+01
	8	XI1Y	INERTIA OF Y-Z ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
	9	XI1Z	INERTIA OF Y-Z ISOLATOR ABOUT THE Z-AXIS	(IN-LB-SEC**2)	0.0
	10	W2	WEIGHT OF X ISOLATOR	(LBS)	0.0
	11	XI2Y	INERTIA OF X ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
	12	TKTX	X STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+01
	13	TKTY	Y STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
	14	TKTZ	Z STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
	15	TKEX	X STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
	16	TKEY	Y STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
	17	TKEZ	Z STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
	18	TKAX	X STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
	19	TKAY	Y STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
	20	TKAZ	Z STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.50000D+04
	21	RKTHB	ROTATIONAL STIFFNESS OF NODE 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
	22	RKHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
	23	RKPHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Z-AXIS	(IN-LB/RAD)	0.0
	24	TCTX	X DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
	25	TCTY	Y DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
	26	TCTZ	Z DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
	27	TCEX	X DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
	28	TCEY	Y DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02

IBM Z30687

29	TCEZ	Z DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
30	TCAX	X DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
31	TCAY	Y DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
32	TCAZ	Z DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
33	RCTHB	ROTATIONAL DAMPING OF NODE 2 ABOUT THE Y-AXIS	(ND)	5.00000D-02
34	RCTHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Y-AXIS	(ND)	5.00000D-02
35	RCPHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Z-AXIS	(ND)	5.00000D-02
36	WTX	X FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
37	WTY	Y FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
38	WTZ	Z FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
39	WEX	X FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
40	WEY	Y FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
41	WEZ	Z FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
42	WAX	X FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
43	WAY	Y FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
44	WAZ	Z FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
45	RCTHB	ROTATIONAL FREQUENCY OF NODE 2 ABOUT THE Y-AXIS	(HZ)	0.0
46	RCTHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Y-AXIS	(HZ)	0.0
47	RCPHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Z-AXIS	(HZ)	0.0
48	I3D2D	CONTROL SWITCH ==> 2 FOR 2-D DAVI & ==> 3 FOR 3-D DAVI ISOLATOR	(ND)	2
49	IFLEX	ACCOUNT FOR FLEXIBILITY OF ISOLATOR BARS ==>0 - NO & ==>1 - YES	(ND)	0
50	RXYM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
51	RXZM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
52	RXZM2	FREQUENCY RATIO OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
53	DXYM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
54	DXZM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
55	DXZM2	CRITICAL DAMPING OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
56	THETA1	EULER PITCH ANGLE AT END 1 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
57	PHI1	EULER ROLL ANGLE AT END 1 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
58	XSII	EULER YAW ANGLE AT END 1 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	1.80000D+02

59	THETA2	EULER PITCH ANGLE AT END 2 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
60	PHI2	EULER ROLL ANGLE AT END 2 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
61	XSI2	EULER YAW ANGLE AT END 2 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	1.80000D+02
62	XT	PIVOT 1 INITIAL X DISPLACEMENT	(INCH)	0.0
63	DXT	PIVOT 1 INITIAL X VELOCITY	(IN/SEC)	0.0
64	YT	PIVOT 1 INITIAL Y DISPLACEMENT	(INCH)	0.0
65	DYT	PIVOT 1 INITIAL Y VELOCITY	(IN/SEC)	0.0
66	ZT	PIVOT 1 INITIAL Z DISPLACEMENT	(INCH)	0.0
67	DZT	PIVOT 1 INITIAL Z VELOCITY	(IN/SEC)	0.0
68	XB	PIVOT 2 INITIAL X DISPLACEMENT	(INCH)	0.0
69	DXB	PIVOT 2 INITIAL X VELOCITY	(IN/SEC)	0.0
70	YB	PIVOT 2 INITIAL Y DISPLACEMENT	(INCH)	0.0
71	DYB	PIVOT 2 INITIAL Y VELOCITY	(IN/SEC)	0.0
72	ZB	PIVOT 2 INITIAL Z DISPLACEMENT	(INCH)	0.0
73	DZB	PIVOT 2 INITIAL Z VELOCITY	(IN/SEC)	0.0

COMPONENT:ISOLATE1

\*\*\*\*\* ISOLATOR TYPE 1 \*\*\*\*\*

ELEMENT:

4

1	NCN1	CONNECTION NODE NUMBER 1	(ND)	4
2	NCN2	CONNECTION NODE NUMBER 2	(ND)	8
3	AL	DISTANCE BETWEEN NODE 1 & PIVOT 2	(IN)	1.25000D+00
4	BL	DISTANCE BETWEEN PIVOT 2 & Y-Z ISOLATOR	(IN)	1.00000D+01
5	CL	DISTANCE BETWEEN PIVOT 2 & NODE 2	(IN)	0.0
6	DL	DISTANCE BETWEEN PIVOT 2 & X ISOLATOR	(IN)	0.0
7	W1	WEIGHT OF Y-Z ISOLATOR	(LBS)	4.40000D+01
8	XI1Y	INERTIA OF Y-Z ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
9	XI1Z	INERTIA OF Y-Z ISOLATOR ABOUT THE Z-AXIS	(IN-LB-SEC**2)	0.0
10	W2	WEIGHT OF X ISOLATOR	(LBS)	0.0
11	XI2Y	INERTIA OF X ISOLATOR ABOUT THE Y-AXIS	(IN-LB-SEC**2)	0.0
12	TKTX	X STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+01
13	TKTY	Y STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
14	TKTZ	Z STIFFNESS BETWEEN NODE 1 & PIVOT 1	(LBS/IN)	1.00000D+09
15	TKEX	X STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
16	TKEY	Y STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
17	TKEZ	Z STIFFNESS BETWEEN PIVOT 1 & NODE 2	(LBS/IN)	1.00000D+05
18	TKAX	X STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
19	TKAY	Y STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.00000D+09
20	TKAZ	Z STIFFNESS BETWEEN NODE 2 & PIVOT 2	(LBS/IN)	1.50000D+04
21	RKTHB	ROTATIONAL STIFFNESS OF NODE 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
22	RKTHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Y-AXIS	(IN-LB/RAD)	0.0
23	RKPHT	ROTATIONAL STIFFNESS OF PIVOT 2 ABOUT THE Z-AXIS	(IN-LB/RAD)	0.0
24	TCTX	X DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
25	TCTY	Y DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
26	TCTZ	Z DAMPING BETWEEN NODE 1 & PIVOT 1	(ND)	5.00000D-02
27	TCEX	X DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
28	TCEY	Y DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02

29	TCEZ	Z DAMPING BETWEEN PIVOT 1 & NODE 2	(ND)	5.00000D-02
30	TCAX	X DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
31	TCAY	Y DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
32	TCAZ	Z DAMPING BETWEEN NODE 2 & PIVOT 2	(ND)	5.00000D-02
33	RCTHB	ROTATIONAL DAMPING OF NODE 2 ABOUT THE Y-AXIS	(ND)	5.00000D-02
34	RCTHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Y-AXIS	(ND)	5.00000D-02
35	RCPHT	ROTATIONAL DAMPING OF PIVOT 2 ABOUT TH Z-AXIS	(ND)	5.00000D-02
36	WTX	X FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
37	WTY	Y FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
38	WTZ	Z FREQUENCY BETWEEN NODE 1 & PIVOT 1	(HZ)	2.48000D+01
39	WEX	X FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
40	WEY	Y FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
41	WEZ	Z FREQUENCY BETWEEN PIVOT 1 & NODE 2	(HZ)	2.48000D+01
42	WAX	X FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
43	WAY	Y FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
44	WAZ	Z FREQUENCY BETWEEN NODE 2 & PIVOT 2	(HZ)	2.48000D+01
45	RCTHB	ROTATIONAL FREQUENCY OF NODE 2 ABOUT THE Y-AXIS	(HZ)	0.0
46	RCTHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Y-AXIS	(HZ)	0.0
47	RCPHT	ROTATIONAL FREQUENCY OF PIVOT 2 ABOUT TH Z-AXIS	(HZ)	0.0
48	I3D2D	CONTROL SWITCH ==> 2 FOR 2-D DAVI & ==> 3 FOR 3-D DAVI ISOLATOR	(ND)	2
49	IFLEX	ACCOUNT FOR FLEXIBILITY OF ISOLATOR BARS ==>0 - NO & ==>1 - YES	(ND)	0
50	RXYM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
51	RXZM1	FREQUENCY RATIO OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
52	RXZM2	FREQUENCY RATIO OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
53	DXYM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Y PLANE	(ND)	0.0
54	DXZM1	CRITICAL DAMPING OF Y-Z ISOLATOR IN X-Z PLANE	(ND)	0.0
55	DXZM2	CRITICAL DAMPING OF X ISOLATOR IN X-Z PLANE	(ND)	0.0
56	THETA1	EULER PITCH ANGLE AT END 1 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
57	PHI1	EULER ROLL ANGLE AT END 1 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
58	XS11	EULER YAW ANGLE AT END 1 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	2.70000D+02

59	THETA2	EULER PITCH ANGLE AT END 2 - ROTATE SECOND ABOUT THE Y-AXIS	(DEG)	0.0
60	PHI2	EULER ROLL ANGLE AT END 2 - ROTATE THIRD ABOUT THE X-AXIS	(DEG)	0.0
61	XSI2	EULER YAW ANGLE AT END 2 - ROTATE FIRST ABOUT THE Z-AXIS	(DEG)	2.700000+02
62	XT	PIVOT 1 INITIAL X DISPLACEMENT	(INCH)	0.0
63	DXT	PIVOT 1 INITIAL X VELOCITY	(IN/SEC)	0.0
64	YT	PIVOT 1 INITIAL Y DISPLACEMENT	(INCH)	0.0
65	DYT	PIVOT 1 INITIAL Y VELOCITY	(IN/SEC)	0.0
66	ZT	PIVOT 1 INITIAL Z DISPLACEMENT	(INCH)	0.0
67	DZT	PIVOT 1 INITIAL Z VELOCITY	(IN/SEC)	0.0
68	XB	PIVOT 2 INITIAL X DISPLACEMENT	(INCH)	0.0
69	DXB	PIVOT 2 INITIAL X VELOCITY	(IN/SEC)	0.0
70	YB	PIVOT 2 INITIAL Y DISPLACEMENT	(INCH)	0.0
71	DYB	PIVOT 2 INITIAL Y VELOCITY	(IN/SEC)	0.0
72	ZB	PIVOT 2 INITIAL Z DISPLACEMENT	(INCH)	0.0
73	DZB	PIVOT 2 INITIAL Z VELOCITY	(IN/SEC)	0.0

NUMBER	OUTPUT COORDINATES				VALUE
72	1	ELEMENT	1	IS1 XT	AMPLITUD 2.2551D-01
	2	ELEMENT	1	IS1 XT	PHASE -9.9181D-01
	3	ELEMENT	1	IS1 YT	AMPLITUD 5.9459D-01
	4	ELEMENT	1	IS1 YT	PHASE 1.7964D+02
	5	ELEMENT	1	IS1 ZT	AMPLITUD 2.2089D+00
	6	ELEMENT	1	IS1 ZT	PHASE 1.7916D+02
	7	ELEMENT	1	IS1 XB	AMPLITUD 2.2526D-01
	8	ELEMENT	1	IS1 XB	PHASE -9.9308D-01
	9	ELEMENT	1	IS1 YB	AMPLITUD 4.4475D-01
	10	ELEMENT	1	IS1 YB	PHASE 1.7882D+02
	11	ELEMENT	1	IS1 ZB	AMPLITUD 1.9198D+00
	12	ELEMENT	1	IS1 ZB	PHASE 1.7916D+02
	13	ELEMENT	1	IS1 XBT	AMPLITUD 1.8109D-01
	14	ELEMENT	1	IS1 XBT	PHASE -1.3185D+00
	15	ELEMENT	1	IS1 YBT	AMPLITUD 5.9461D-01
	16	ELEMENT	1	IS1 YBT	PHASE 1.7964D+02
	17	ELEMENT	1	IS1 ZBT	AMPLITUD 2.2090D+00
	18	ELEMENT	1	IS1 ZBT	PHASE 1.7916D+02
	19	ELEMENT	1	IS1 TXBT	AMPLITUD 0.0
	20	ELEMENT	1	IS1 TXBT	PHASE 0.0
	21	ELEMENT	1	IS1 TYBT	AMPLITUD 0.0
	22	ELEMENT	1	IS1 TYBT	PHASE 0.0
	23	ELEMENT	1	IS1 TZBT	AMPLITUD 0.0
	24	ELEMENT	1	IS1 TZBT	PHASE 0.0
	25	ELEMENT	1	IS1 XBF	AMPLITUD 2.2526D-01
	26	ELEMENT	1	IS1 XBF	PHASE -9.9309D-01
	27	ELEMENT	1	IS1 YBF	AMPLITUD 4.4473D-01
	28	ELEMENT	1	IS1 YBF	PHASE 1.7882D+02
	29	ELEMENT	1	IS1 ZBF	AMPLITUD 1.8882D-02
	30	ELEMENT	1	IS1 ZBF	PHASE -1.7868D+02
	31	ELEMENT	1	IS1 TXBF	AMPLITUD 0.0
	32	ELEMENT	1	IS1 TXBF	PHASE 0.0
	33	ELEMENT	1	IS1 TYBF	AMPLITUD 0.0
	34	ELEMENT	1	IS1 TYBF	PHASE 0.0
	35	ELEMENT	1	IS1 TZBF	AMPLITUD 0.0
	36	ELEMENT	1	IS1 TZBF	PHASE 0.0
	37	ELEMENT	2	IS1 XT	AMPLITUD 4.4941D-01
	38	ELEMENT	2	IS1 XT	PHASE 1.7883D+02
	39	ELEMENT	2	IS1 YT	AMPLITUD 4.0896D-01
	40	ELEMENT	2	IS1 YT	PHASE -1.7981D+02
	41	ELEMENT	2	IS1 ZT	AMPLITUD 3.0899D+00
	42	ELEMENT	2	IS1 ZT	PHASE -1.2960D+00
	43	ELEMENT	2	IS1 XB	AMPLITUD 4.4891D-01
	44	ELEMENT	2	IS1 XB	PHASE 1.7883D+02
	45	ELEMENT	2	IS1 YB	AMPLITUD 2.2110D-01
	46	ELEMENT	2	IS1 YB	PHASE 1.7897D+02
	47	ELEMENT	2	IS1 ZB	AMPLITUD 2.6715D+00
	48	ELEMENT	2	IS1 ZB	PHASE -1.3015D+00
	49	ELEMENT	2	IS1 XBT	AMPLITUD 3.6677D-01
	50	ELEMENT	2	IS1 XBT	PHASE 1.7854D+02
	51	ELEMENT	2	IS1 YBT	AMPLITUD 4.0898D-01
	52	ELEMENT	2	IS1 YBT	PHASE -1.7981D+02
	53	ELEMENT	2	IS1 ZBT	AMPLITUD 3.0900D+00
	54	ELEMENT	2	IS1 ZBT	PHASE -1.2960D+00
	55	ELEMENT	2	IS1 TXBT	AMPLITUD 0.0



56	ELEMENT	2	IS1	TXBT	PHASE	0.0
57	ELEMENT	2	IS1	TYBT	AMPLITUD	0.0
58	ELEMENT	2	IS1	TYBT	PHASE	0.0
59	ELEMENT	2	IS1	TZBT	AMPLITUD	0.0
60	ELEMENT	2	IS1	TZBT	PHASE	0.0
61	ELEMENT	2	IS1	XBF	AMPLITUD	4.4891D-01
62	ELEMENT	2	IS1	XBF	PHASE	1.7883D+02
63	ELEMENT	2	IS1	YBF	AMPLITUD	2.2108D-01
64	ELEMENT	2	IS1	YBF	PHASE	1.7897D+02
65	ELEMENT	2	IS1	ZBF	AMPLITUD	7.2264D-02
66	ELEMENT	2	IS1	ZBF	PHASE	1.7940D+02
67	ELEMENT	2	IS1	TXBF	AMPLITUD	0.0
68	ELEMENT	2	IS1	TXBF	PHASE	0.0
69	ELEMENT	2	IS1	TYBF	AMPLITUD	0.0
70	ELEMENT	2	IS1	TYBF	PHASE	0.0
71	ELEMENT	2	IS1	TZBF	AMPLITUD	0.0
72	ELEMENT	2	IS1	TZBF	PHASE	0.0
73	ELEMENT	3	IS1	XT	AMPLITUD	2.2551D-01
74	ELEMENT	3	IS1	XT	PHASE	1.7901D+02
75	ELEMENT	3	IS1	YT	AMPLITUD	1.3954D-01
76	ELEMENT	3	IS1	YT	PHASE	-6.1143D+00
77	ELEMENT	3	IS1	ZT	AMPLITUD	2.1506D+00
78	ELEMENT	3	IS1	ZT	PHASE	-8.1492D-01
79	ELEMENT	3	IS1	XB	AMPLITUD	2.2526D-01
80	ELEMENT	3	IS1	XB	PHASE	1.7901D+02
81	ELEMENT	3	IS1	YB	AMPLITUD	4.4471D-01
82	ELEMENT	3	IS1	YB	PHASE	-1.1850D+00
83	ELEMENT	3	IS1	ZB	AMPLITUD	1.8609D+00
84	ELEMENT	3	IS1	ZB	PHASE	-8.1924D-01
85	ELEMENT	3	IS1	XBT	AMPLITUD	1.8109D-01
86	ELEMENT	3	IS1	XBT	PHASE	1.7868D+02
87	ELEMENT	3	IS1	YBT	AMPLITUD	1.3951D-01
88	ELEMENT	3	IS1	YBT	PHASE	-6.1157D+00
89	ELEMENT	3	IS1	ZBT	AMPLITUD	2.1506D+00
90	ELEMENT	3	IS1	ZBT	PHASE	-8.1492D-01
91	ELEMENT	3	IS1	TXBT	AMPLITUD	0.0
92	ELEMENT	3	IS1	TXBT	PHASE	0.0
93	ELEMENT	3	IS1	TYBT	AMPLITUD	0.0
94	ELEMENT	3	IS1	TYBT	PHASE	0.0
95	ELEMENT	3	IS1	TZBT	AMPLITUD	0.0
96	ELEMENT	3	IS1	TZBT	PHASE	0.0
97	ELEMENT	3	IS1	XBF	AMPLITUD	2.2526D-01
98	ELEMENT	3	IS1	XBF	PHASE	1.7901D+02
99	ELEMENT	3	IS1	YBF	AMPLITUD	4.4473D-01
100	ELEMENT	3	IS1	YBF	PHASE	-1.1848D+00
101	ELEMENT	3	IS1	ZBF	AMPLITUD	3.9368D-02
102	ELEMENT	3	IS1	ZBF	PHASE	1.7972D+02
103	ELEMENT	3	IS1	TXBF	AMPLITUD	0.0
104	ELEMENT	3	IS1	TXBF	PHASE	0.0
105	ELEMENT	3	IS1	TYBF	AMPLITUD	0.0
106	ELEMENT	3	IS1	TYBF	PHASE	0.0
107	ELEMENT	3	IS1	TZBF	AMPLITUD	0.0
108	ELEMENT	3	IS1	TZBF	PHASE	0.0
109	ELEMENT	4	IS1	XT	AMPLITUD	4.4941D-01
110	ELEMENT	4	IS1	XT	PHASE	-1.1659D+00
111	ELEMENT	4	IS1	YT	AMPLITUD	4.7872D-02
112	ELEMENT	4	IS1	YT	PHASE	-1.6829D+02
113	ELEMENT	4	IS1	ZT	AMPLITUD	3.1483D+00
114	ELEMENT	4	IS1	ZT	PHASE	1.7870D+02
115	ELEMENT	4	IS1	XB	AMPLITUD	4.4891D-01

116	ELEMENT	4	IS1	XB	PHASE	-1.1671D+00
117	ELEMENT	4	IS1	YB	AMPLITUD	2.2941D-01
118	ELEMENT	4	IS1	YB	PHASE	-9.6214D-01
119	ELEMENT	4	IS1	ZB	AMPLITUD	2.7427D+00
120	ELEMENT	4	IS1	ZB	PHASE	1.7870D+02
121	ELEMENT	4	IS1	XBT	AMPLITUD	3.6677D-01
122	ELEMENT	4	IS1	XBT	PHASE	-1.4554D+00
123	ELEMENT	4	IS1	YBT	AMPLITUD	4.7897D-02
124	ELEMENT	4	IS1	YBT	PHASE	-1.6830D+02
125	ELEMENT	4	IS1	ZBT	AMPLITUD	3.1484D+00
126	ELEMENT	4	IS1	ZBT	PHASE	1.7870D+02
127	ELEMENT	4	IS1	TXBT	AMPLITUD	0.0
128	ELEMENT	4	IS1	TXBT	PHASE	0.0
129	ELEMENT	4	IS1	TYBT	AMPLITUD	0.0
130	ELEMENT	4	IS1	TYBT	PHASE	0.0
131	ELEMENT	4	IS1	TZBT	AMPLITUD	0.0
132	ELEMENT	4	IS1	TZBT	PHASE	0.0
133	ELEMENT	4	IS1	XBF	AMPLITUD	4.4891D-01
134	ELEMENT	4	IS1	XBF	PHASE	-1.1671D+00
135	ELEMENT	4	IS1	YBF	AMPLITUD	2.2943D-01
136	ELEMENT	4	IS1	YBF	PHASE	-9.6192D-01
137	ELEMENT	4	IS1	ZBF	AMPLITUD	7.2264D-02
138	ELEMENT	4	IS1	ZBF	PHASE	1.7940D+02
139	ELEMENT	4	IS1	TXBF	AMPLITUD	0.0
140	ELEMENT	4	IS1	TXBF	PHASE	0.0
141	ELEMENT	4	IS1	TYBF	AMPLITUD	0.0
142	ELEMENT	4	IS1	TYBF	PHASE	0.0
143	ELEMENT	4	IS1	TZBF	AMPLITUD	0.0
144	ELEMENT	4	IS1	TZBF	PHASE	0.0
145	ELEMENT	5	MS1	MODE	AMPLITUD	2.0309D-01
146	ELEMENT	5	MS1	MODE	PHASE	-9.1087D-01
147	ELEMENT	6	MS1	MODE	AMPLITUD	3.5560D-01
148	ELEMENT	6	MS1	MODE	PHASE	1.7883D+02
149	ELEMENT	7	MS1	MODE	AMPLITUD	2.9122D-02
150	ELEMENT	7	MS1	MODE	PHASE	-1.7976D+02
151	ELEMENT	8	MS1	MODE	AMPLITUD	5.3934D-03
152	ELEMENT	8	MS1	MODE	PHASE	-1.1639D+00
153	ELEMENT	9	MS1	MODE	AMPLITUD	1.2812D-03
154	ELEMENT	9	MS1	MODE	PHASE	-1.7464D+00
155	ELEMENT	10	MS1	MODE	AMPLITUD	5.2209D-04
156	ELEMENT	10	MS1	MODE	PHASE	-1.7928D+02
157	ELEMENT	11	MS1	MODE	AMPLITUD	1.6717D+00
158	ELEMENT	11	MS1	MODE	PHASE	1.7923D+02
159	ELEMENT	12	MS1	MODE	AMPLITUD	2.2845D+00
160	ELEMENT	12	MS1	MODE	PHASE	-1.2742D+00
161	ELEMENT	13	MS1	MODE	AMPLITUD	2.9181D-02
162	ELEMENT	13	MS1	MODE	PHASE	1.7836D+02
163	ELEMENT	14	MS1	MODE	AMPLITUD	3.8990D-01
164	ELEMENT	14	MS1	MODE	PHASE	1.7870D+02
165	ELEMENT	15	MS1	MODE	AMPLITUD	2.7247D-01
166	ELEMENT	15	MS1	MODE	PHASE	1.7917D+02
167	ELEMENT	16	MS1	MODE	AMPLITUD	2.8501D-02
168	ELEMENT	16	MS1	MODE	PHASE	1.3941D+00
169	ELEMENT	18	GF1	X	AMPLITUD	6.7670D+00
170	ELEMENT	18	GF1	X	PHASE	1.7919D+02
171	ELEMENT	18	GF1	Y	AMPLITUD	9.5756D+00
172	ELEMENT	18	GF1	Y	PHASE	-1.2933D+00
173	ELEMENT	18	GF1	Z	AMPLITUD	2.9181D-02
174	ELEMENT	18	GF1	Z	PHASE	1.7836D+02
175	ELEMENT	18	GF1	THTX	AMPLITUD	4.6788D+00

176	ELEMENT	18	GF1	THTX	PHASE	1.7870D+02
177	ELEMENT	18	GF1	THTY	AMPLITUD	3.2697D+00
178	ELEMENT	18	GF1	THTY	PHASE	1.7917D+02
179	ELEMENT	18	GF1	THTZ	AMPLITUD	3.4201D-01
180	ELEMENT	18	GF1	THTZ	PHASE	1.3941D+00

\*\*\*\*\* STATISTICS \*\*\*\*\*

FINAL SIZE OF WORKING STORAGE (MAXSIZ) IS 14831 WORDS.

## BASE PROGRAM CASE 11

4 2-D ISOLATORS - 3 FORCES &amp; 3 MOMENTS

6 TRANSMISSION &amp; 6 FUSELAGE MODES

FREQUENCY (HZ)

76	19.1	180.1	44.0000
	1.1	1IS1 XT	AMPLITUD
	2.1	1IS1 XT	PHASE
	3.1	1IS1 YT	AMPLITUD
	4.1	1IS1 YT	PHASE
	5.1	1IS1 ZT	AMPLITUD
	6.1	1IS1 ZT	PHASE
	7.1	1IS1 XB	AMPLITUD
	8.1	1IS1 XB	PHASE
	9.1	1IS1 YB	AMPLITUD
	10.1	1IS1 YB	PHASE
	11.1	1IS1 ZB	AMPLITUD
	12.1	1IS1 ZB	PHASE
	13.1	1IS1 XBT	AMPLITUD
	14.1	1IS1 XBT	PHASE
	15.1	1IS1 YBT	AMPLITUD
	16.1	1IS1 YBT	PHASE
	17.1	1IS1 ZBT	AMPLITUD
	18.1	1IS1 ZBT	PHASE
	19.1	1IS1 TXBT	AMPLITUD
	20.1	1IS1 TXBT	PHASE
	21.1	1IS1 TYBT	AMPLITUD
	22.1	1IS1 TYBT	PHASE
	23.1	1IS1 TZBT	AMPLITUD
	24.1	1IS1 TZBT	PHASE
	25.1	1IS1 XBF	AMPLITUD
	26.1	1IS1 XBF	PHASE
	27.1	1IS1 YBF	AMPLITUD
	28.1	1IS1 YBF	PHASE
	29.1	1IS1 ZBF	AMPLITUD
	30.1	1IS1 ZBF	PHASE
	31.1	1IS1 TXBF	AMPLITUD
	32.1	1IS1 TXBF	PHASE
	33.1	1IS1 TYBF	AMPLITUD
	34.1	1IS1 TYBF	PHASE
	35.1	1IS1 TZBF	AMPLITUD
	36.1	1IS1 TZBF	PHASE
	37.1	2IS1 XT	AMPLITUD
	38.1	2IS1 XT	PHASE
	39.1	2IS1 YT	AMPLITUD
	40.1	2IS1 YT	PHASE
	41.1	2IS1 ZT	AMPLITUD
	42.1	2IS1 ZT	PHASE
	43.1	2IS1 XB	AMPLITUD
	44.1	2IS1 XB	PHASE
	45.1	2IS1 YB	AMPLITUD
	46.1	2IS1 YB	PHASE
	47.1	2IS1 ZB	AMPLITUD
	48.1	2IS1 ZB	PHASE
	49.1	2IS1 XBT	AMPLITUD
	50.1	2IS1 XBT	PHASE
	51.1	2IS1 YBT	AMPLITUD
	52.1	2IS1 YBT	PHASE
	53.1	2IS1 ZBT	AMPLITUD
	54.1	2IS1 ZBT	PHASE
	55.1	2IS1 TXBT	AMPLITUD

NOTE: DATA WRITTEN TO UNIT 2 FOR PLOTTING

(SEE REF., FIGURE 47) - FREQUENCY = 5 TO 50 HZ

56.1	2IS1	TXBT	PHASE
57.1	2IS1	TYBT	AMPLITUD
58.1	2IS1	TYBT	PHASE
59.1	2IS1	TZBT	AMPLITUD
60.1	2IS1	TZBT	PHASE
61.1	2IS1	XBF	AMPLITUD
62.1	2IS1	XBF	PHASE
63.1	2IS1	YBF	AMPLITUD
64.1	2IS1	YBF	PHASE
65.1	2IS1	ZBF	AMPLITUD
66.1	2IS1	ZBF	PHASE
67.1	2IS1	TXBF	AMPLITUD
68.1	2IS1	TXBF	PHASE
69.1	2IS1	TYBF	AMPLITUD
70.1	2IS1	TYBF	PHASE
71.1	2IS1	TZBF	AMPLITUD
72.1	2IS1	TZBF	PHASE
73.1	3IS1	XT	AMPLITUD
74.1	3IS1	XT	PHASE
75.1	3IS1	YT	AMPLITUD
76.1	3IS1	YT	PHASE
77.1	3IS1	ZT	AMPLITUD
78.1	3IS1	ZT	PHASE
79.1	3IS1	XB	AMPLITUD
80.1	3IS1	XB	PHASE
81.1	3IS1	YB	AMPLITUD
82.1	3IS1	YB	PHASE
83.1	3IS1	ZB	AMPLITUD
84.1	3IS1	ZB	PHASE
85.1	3IS1	XBT	AMPLITUD
86.1	3IS1	XBT	PHASE
87.1	3IS1	YBT	AMPLITUD
88.1	3IS1	YBT	PHASE
89.1	3IS1	ZBT	AMPLITUD
90.1	3IS1	ZBT	PHASE
91.1	3IS1	TXBT	AMPLITUD
92.1	3IS1	TXBT	PHASE
93.1	3IS1	TYBT	AMPLITUD
94.1	3IS1	TYBT	PHASE
95.1	3IS1	TZBT	AMPLITUD
96.1	3IS1	TZBT	PHASE
97.1	3IS1	XBF	AMPLITUD
98.1	3IS1	XBF	PHASE
99.1	3IS1	YBF	AMPLITUD
100.1	3IS1	YBF	PHASE
101.1	3IS1	ZBF	AMPLITUD
102.1	3IS1	ZBF	PHASE
103.1	3IS1	TXBF	AMPLITUD
104.1	3IS1	TXBF	PHASE
105.1	3IS1	TYBF	AMPLITUD
106.1	3IS1	TYBF	PHASE
107.1	3IS1	TZBF	AMPLITUD
108.1	3IS1	TZBF	PHASE
109.1	4IS1	XT	AMPLITUD
110.1	4IS1	XT	PHASE
111.1	4IS1	YT	AMPLITUD
112.1	4IS1	YT	PHASE
113.1	4IS1	ZT	AMPLITUD
114.1	4IS1	ZT	PHASE
115.1	4IS1	XB	AMPLITUD

116.1	4IS1 XB PHASE
117.1	4IS1 YB AMPLITUD
118.1	4IS1 YB PHASE
119.1	4IS1 ZB AMPLITUD
120.1	4IS1 ZB PHASE
121.1	4IS1 XBT AMPLITUD
122.1	4IS1 XBT PHASE
123.1	4IS1 YBT AMPLITUD
124.1	4IS1 YBT PHASE
125.1	4IS1 ZBT AMPLITUD
126.1	4IS1 ZBT PHASE
127.1	4IS1 TXBTAMPLITUD
128.1	4IS1 TXBTPHASE
129.1	4IS1 TYBTAMPLITUD
130.1	4IS1 TYBTPHASE
131.1	4IS1 TZBTAMPLITUD
132.1	4IS1 TZBTPHASE
133.1	4IS1 XBF AMPLITUD
134.1	4IS1 XBF PHASE
135.1	4IS1 YBF AMPLITUD
136.1	4IS1 YBF PHASE
137.1	4IS1 ZBF AMPLITUD
138.1	4IS1 ZBF PHASE
139.1	4IS1 TXBFAMPLITUD
140.1	4IS1 TXBFPHASE
141.1	4IS1 TYBFAMPLITUD
142.1	4IS1 TYBFPHASE
143.1	4IS1 TZBFAMPLITUD
144.1	4IS1 TZBFPHASE
145.1	5MS1 MODEAMPLITUD
146.1	5MS1 MODEPHASE
147.1	6MS1 MODEAMPLITUD
148.1	6MS1 MODEPHASE
149.1	7MS1 MODEAMPLITUD
150.1	7MS1 MODEPHASE
151.1	8MS1 MODEAMPLITUD
152.1	8MS1 MODEPHASE
153.1	9MS1 MODEAMPLITUD
154.1	9MS1 MODEPHASE
155.1	10MS1 MODEAMPLITUD
156.1	10MS1 MODEPHASE
157.1	11MS1 MODEAMPLITUD
158.1	11MS1 MODEPHASE
159.1	12MS1 MODEAMPLITUD
160.1	12MS1 MODEPHASE
161.1	13MS1 MODEAMPLITUD
162.1	13MS1 MODEPHASE
163.1	14MS1 MODEAMPLITUD
164.1	14MS1 MODEPHASE
165.1	15MS1 MODEAMPLITUD
166.1	15MS1 MODEPHASE
167.1	16MS1 MODEAMPLITUD
168.1	16MS1 MODEPHASE
169.1	18GF1 X AMPLITUD
170.1	18GF1 X PHASE
171.1	18GF1 Y AMPLITUD
172.1	18GF1 Y PHASE
173.1	18GF1 Z AMPLITUD
174.1	18GF1 Z PHASE
175.1	18GF1 THTXAMPLITUD

176.1 18GF1 THTXPHASE  
 177.1 18GF1 THTYAMPLITUD  
 178.1 18GF1 THTYPHASE  
 179.1 18GF1 THTZAMPLITUD  
 180.1 18GF1 THTZPHASE

1.1	5.0000D+00			
2.2551D-01	-9.9181D-01	5.9459D-01	1.7964D+02	2.2089D+00
1.7916D+02	2.2526D-01	-9.9308D-01	4.4475D-01	1.7882D+02
1.9198D+00	1.7916D+02	1.8109D-01	-1.3185D+00	5.9461D-01
1.7964D+02	2.2090D+00	1.7916D+02	0.0	0.0
0.0	0.0	0.0	0.0	2.2526D-01
-9.9309D-01	4.4473D-01	1.7882D+02	1.8882D-02	-1.7868D+02
0.0	0.0	0.0	0.0	0.0
0.0	4.4941D-01	1.7883D+02	4.0896D-01	-1.7981D+02
3.0899D+00	-1.2960D+00	4.4891D-01	1.7883D+02	2.2110D-01
1.7897D+02	2.6715D+00	-1.3015D+00	3.6677D-01	1.7854D+02
4.0898D-01	-1.7981D+02	3.0900D+00	-1.2960D+00	0.0
0.0	0.0	0.0	0.0	0.0
4.4891D-01	1.7883D+02	2.2108D-01	1.7897D+02	7.2264D-02
1.7940D+02	0.0	0.0	0.0	0.0
0.0	0.0	2.2551D-01	1.7901D+02	1.3954D-01
-6.1143D+00	2.1506D+00	-8.1492D-01	2.2526D-01	1.7901D+02
4.4471D-01	-1.1850D+00	1.8609D+00	-8.1924D-01	1.8109D-01
1.7868D+02	1.3951D-01	-6.1157D+00	2.1506D+00	-8.1492D-01
0.0	0.0	0.0	0.0	0.0
0.0	2.2526D-01	1.7901D+02	4.4473D-01	-1.1848D+00
3.9368D-02	1.7972D+02	0.0	0.0	0.0
0.0	0.0	0.0	4.4941D-01	-1.1659D+00
4.7872D-02	-1.6829D+02	3.1483D+00	1.7870D+02	4.4891D-01
-1.1671D+00	2.2941D-01	-9.6214D-01	2.7427D+00	1.7870D+02
3.6677D-01	-1.4554D+00	4.7897D-02	-1.6830D+02	3.1484D+00
1.7870D+02	0.0	0.0	0.0	0.0
0.0	0.0	4.4891D-01	-1.1671D+00	2.2943D-01
-9.6192D-01	7.2264D-02	1.7940D+02	0.0	0.0
0.0	0.0	0.0	0.0	2.0309D-01
-9.1087D-01	3.5560D-01	1.7883D+02	2.9122D-02	-1.7976D+02
5.3934D-03	-1.1639D+00	1.2812D-03	-1.7464D+00	5.2209D-04
-1.7928D+02	1.6717D+00	1.7923D+02	2.2845D+00	-1.2742D+00
2.9181D-02	1.7836D+02	3.8990D-01	1.7870D+02	2.7247D-01
1.7917D+02	2.8501D-02	1.3941D+00	6.7670D+00	1.7919D+02
9.5756D+00	-1.2933D+00	2.9181D-02	1.7836D+02	4.6788D+00
1.7870D+02	3.2697D+00	1.7917D+02	3.4201D-01	1.3941D+00
2.1	7.5000D+00			
1.5091D-01	-4.3525D-01	8.5054D-01	-1.7814D+02	1.5503D+00
1.7952D+02	1.5053D-01	-4.3953D-01	2.9266D-01	1.7960D+02
1.3464D+00	1.7952D+02	7.2986D-02	-2.7567D+00	8.5058D-01
-1.7814D+02	1.5503D+00	1.7952D+02	0.0	0.0
0.0	0.0	0.0	0.0	1.5053D-01
-4.3953D-01	2.9261D-01	1.7960D+02	3.0301D-02	-1.7928D+02
0.0	0.0	0.0	0.0	0.0
0.0	2.9930D-01	1.7963D+02	7.6180D-01	-1.7774D+02
1.9226D+00	-4.8380D-01	2.9856D-01	1.7963D+02	1.4464D-01
1.7951D+02	1.6538D+00	-4.9978D-01	1.6189D-01	1.7787D+02
7.6185D-01	-1.7774D+02	1.9227D+00	-4.8380D-01	0.0
0.0	0.0	0.0	0.0	0.0
2.9856D-01	1.7963D+02	1.4459D-01	1.7951D+02	6.3195D-02
-1.7991D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.5091D-01	1.7956D+02	5.2799D-01
-1.7570D+02	1.5671D+00	-3.2360D-01	1.5053D-01	1.7956D+02
2.9255D-01	-3.9767D-01	1.3500D+00	-3.3817D-01	7.2986D-02

08	1.77240+02	5.28060-01	-1.75700+02	1.56710+00	-3.23600-01
	0.0	0.0	0.0	0.0	0.0
	0.0	1.50530-01	1.79560+02	2.92610-01	-3.97070-01
	3.85300-02	-1.79740+02	0.00000-79	0.00000-79	0.00000-79
	0.0	0.0	0.0	2.99300-01	-3.67310-01
	6.16510-01	-1.76550+02	1.90580+00	1.79390+02	2.98560-01
	-3.71600-01	1.56420-01	-3.90400-01	1.65930+00	1.79390+02
	1.61890-01	-2.12610+00	6.16570-01	-1.76550+02	1.90590+00
	1.79390+02	0.0	0.0	0.0	0.0
	0.0	0.0	2.98560-01	-3.71600-01	1.56480-01
	-3.89330-01	6.31950-02	-1.79910+02	0.00000-79	0.00000-79
	0.00000-79	0.0	0.0	0.0	1.41630-01
	-3.75600-01	2.36320-01	1.79630+02	3.44150-02	-1.79540+02
	3.59760-03	-3.61640-01	5.14640-04	-1.45660+00	7.43180-04
	-1.79120+02	1.25200+00	1.79740+02	1.46530+00	-3.71860-01
	8.65580-03	1.34930+01	2.39280-01	1.79450+02	1.94840-01
	1.79600+02	8.61470-02	2.79380+00	4.89560+00	1.79640+02
	5.93990+00	-5.03320-01	8.65570-03	1.34930+01	2.87140+00
	1.79450+02	2.33810+00	1.79600+02	1.03380+00	2.79380+00
	3.1	1.00000+01			
	1.39660-01	-3.29180-02	2.32320+00	-1.73390+02	1.34120+00
	1.79380+02	1.39050-01	-4.29440-02	2.72090-01	1.79900+02
	1.16190+00	1.79370+02	1.96080-02	-1.51230+02	2.32330+00
	-1.73390+02	1.34120+00	1.79380+02	0.0	0.0
	0.0	0.0	0.0	0.0	1.39050-01
	-4.29450-02	2.71950-01	1.79900+02	4.02240-02	-1.78530+02
	0.0	0.0	0.0	0.0	0.0
	0.0	2.83230-01	-1.79940+02	2.29940+00	-1.73150+02
	1.74510+00	-1.54460-01	2.81990-01	-1.79950+02	1.29160-01
	1.79650+02	1.48850+00	-2.08260-01	1.80370-02	1.14790+02
	2.29960+00	-1.73150+02	1.74520+00	-1.54460-01	0.0
	0.0	0.0	0.0	0.0	0.0
	2.81990-01	-1.79950+02	1.29010-01	1.79640+02	7.03260-02
	-1.79180+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.39660-01	1.79970+02	2.31210+00
	-1.72540+02	1.48370+00	-3.75920-03	1.39050-01	1.79960+02
	2.71780-01	-1.04750-01	1.26820+00	-5.43040-02	1.96080-02
	2.87660+01	2.31230+00	-1.72540+02	1.48370+00	-3.75890-03
	0.0	0.0	0.0	0.0	0.0
	0.0	1.39050-01	1.79960+02	2.71950-01	-1.01130-01
	4.57760-02	-1.78850+02	0.00000-79	0.00000-79	0.00000-79
	0.0	0.0	0.0	2.83230-01	5.63570-02
	2.33580+00	-1.72790+02	1.60270+00	1.79320+02	2.81990-01
	4.62760-02	1.48910-01	2.25810-01	1.39270+00	1.79310+02
	1.80380-02	-6.52140+01	2.33600+00	-1.72790+02	1.60270+00
	1.79320+02	0.0	0.0	0.0	0.0
	0.0	0.0	2.81990-01	4.62750-02	1.49080-01
	2.31950-01	7.03260-02	-1.79180+02	0.00000-79	0.00000-79
	0.00000-79	0.0	0.0	0.0	1.33040-01
	9.60650-03	2.22890-01	-1.79960+02	4.30000-02	-1.78700+02
	3.41630-03	7.98930-02	3.47340-04	-1.20650+00	1.25730-03
	-1.75970+02	1.21770+00	-1.79850+02	1.41520+00	2.53480-01
	7.16520-02	5.76330+00	2.09240-01	1.79590+02	1.76550-01
	1.79700+02	2.89720-01	7.03280+00	4.51920+00	1.79820+02
	5.32790+00	-2.31800-01	7.16520-02	5.76330+00	2.51090+00
	1.79590+02	2.11860+00	1.79700+02	3.47660+00	7.03280+00
	4.1	1.25000+01			
	1.48310-01	1.08150+00	1.67380+01	-4.35990+01	1.12380+00
	1.78040+02	1.47310-01	1.06250+00	3.20860-01	1.76780+02
	9.71540-01	1.78050+02	2.10210-01	-1.68960+02	1.67390+01



-4.3599D+01	1.1238D+00	1.7804D+02	0.0	0.0
0.0	0.0	0.0	0.0	1.4731D-01
1.0625D+00	3.2148D-01	1.7668D+02	6.0423D-02	-1.7618D+02
0.0	0.0	0.0	0.0	0.0
0.0	2.9776D-01	-1.7796D+02	1.6731D+01	-4.3884D+01
1.7785D+00	4.3966D-01	2.9573D-01	-1.7798D+02	1.7401D-01
1.7151D+02	1.4897D+00	2.2415D-01	2.8517D-01	1.9627D+01
1.6732D+01	-4.3884D+01	1.7785D+00	4.3967D-01	0.0
0.0	0.0	0.0	0.0	0.0
2.9573D-01	-1.7798D+02	1.7467D-01	1.7134D+02	9.1785D-02
-1.7683D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.4831D-01	-1.7892D+02	1.6489D+01
-4.5369D+01	1.5604D+00	8.3049D-01	1.4731D-01	-1.7894D+02
3.2204D-01	-3.4226D+00	1.3110D+00	6.3279D-01	2.1021D-01
1.1041D+01	1.6489D+01	-4.5369D+01	1.5604D+00	8.3049D-01
0.0	0.0	0.0	0.0	0.0
0.0	1.4731D-01	-1.7894D+02	3.2148D-01	-3.3199D+00
6.5157D-02	-1.7648D+02	0.0000D-79	0.0000D-79	0.0000D-79
0.0	0.0	0.0	2.9776D-01	2.0385D+00
1.6493D+01	-4.5079D+01	1.3422D+00	1.7798D+02	2.9573D-01
2.0198D+00	1.2634D-01	1.4280D+01	1.1653D+00	1.7802D+02
2.8517D-01	-1.6037D+02	1.6494D+01	-4.5079D+01	1.3422D+00
1.7798D+02	0.0	0.0	0.0	0.0
0.0	0.0	2.9573D-01	2.0198D+00	1.2596D-01
1.4609D+01	9.1785D-02	-1.7683D+02	0.0000D-79	0.0000D-79
0.0000D-79	0.0	0.0	0.0	1.4218D-01
1.1127D+00	2.3301D-01	-1.7800D+02	6.2790D-02	-1.7633D+02
3.6253D-03	2.0890D+00	2.9660D-04	-3.2719D-01	4.8221D-03
-4.8832D+01	1.3472D+00	-1.7857D+02	1.5966D+00	2.9241D+00
2.2067D-01	7.9487D+00	1.9500D-01	1.7938D+02	1.6772D-01
1.7966D+02	2.0765D+00	1.3552D+02	4.4831D+00	-1.7981D+02
5.2409D+00	4.5936D-01	2.2067D-01	7.9487D+00	2.3400D+00
1.7938D+02	2.0126D+00	1.7966D+02	2.4918D+01	1.3552D+02
5.1	1.5000D+01			
2.1876D-01	1.1229D+01	4.9354D+00	4.6282D+00	5.7413D-01
1.3989D+02	2.1669D-01	1.1202D+01	4.3923D-01	-1.6970D+02
5.0214D-01	1.4581D+02	1.1444D+00	-1.5380D+02	4.9356D+00
4.6280D+00	5.7414D-01	1.3989D+02	0.0	0.0
0.0	0.0	0.0	0.0	2.1669D-01
1.1202D+01	4.3937D-01	-1.6970D+02	1.4200D-01	-1.6338D+02
0.0	0.0	0.0	0.0	0.0
0.0	4.3919D-01	-1.6948D+02	4.3328D+00	1.5412D+00
2.2102D+00	6.3721D+00	4.3498D-01	-1.6951D+02	2.2095D-01
-1.6918D+02	1.7412D+00	4.8548D+00	1.7965D+00	2.5977D+01
4.3329D+00	1.5410D+00	2.2102D+00	6.3721D+00	0.0
0.0	0.0	0.0	0.0	0.0
4.3498D-01	-1.6951D+02	2.2107D-01	-1.6919D+02	1.8839D-01
-1.6483D+02	0.0	0.0	0.0	0.0
0.0	0.0	2.1876D-01	-1.6877D+02	2.0582D+00
-3.4828D+01	2.0823D+00	7.8878D+00	2.1669D-01	-1.6880D+02
4.3940D-01	1.0292D+01	1.6528D+00	6.5327D+00	1.1444D+00
2.6195D+01	2.0583D+00	-3.4828D+01	2.0823D+00	7.8878D+00
0.0	0.0	0.0	0.0	0.0
0.0	2.1669D-01	-1.6880D+02	4.3937D-01	1.0296D+01
1.4763D-01	-1.6370D+02	0.0000D-79	0.0000D-79	0.0000D-79
0.0	0.0	0.0	4.3919D-01	1.0518D+01
2.4467D+00	-2.1425D+01	7.0485D-01	1.4440D+02	4.3498D-01
1.0489D+01	2.1237D-01	1.1599D+01	6.2690D-01	1.5036D+02
1.7965D+00	-1.5402D+02	2.4468D+00	-2.1426D+01	7.0486D-01
1.4440D+02	0.0	0.0	0.0	0.0

	0.0	0.0	4.3498D-01	1.0489D+01	2.1232D-01
	1.1611D+01	1.8839D-01	-1.6483D+02	0.0000D-79	0.0000D-79
	0.0000D-79	0.0	0.0	0.0	2.1055D-01
	1.1283D+01	3.4040D-01	-1.6963D+02	1.4482D-01	-1.6354D+02
82	5.4669D-03	1.0904D+01	3.5549D-04	8.3958D+00	5.7865D-04
	-7.9477D+00	2.1421D+00	-1.6734D+02	2.8826D+00	1.4397D+01
	8.7543D-01	2.1991D+01	1.7341D-01	1.7659D+02	1.5645D-01
	1.7807D+02	4.1591D-01	1.7329D+02	5.0277D+00	-1.7577D+02
	6.0519D+00	4.9659D+00	8.7543D-01	2.1991D+01	2.0810D+00
	1.7659D+02	1.8774D+00	1.7807D+02	4.9910D+00	1.7329D+02
	6.1	1.7500D+01			
	4.2833D-02	7.3887D+01	7.6571D-01	1.0105D+02	2.2867D+00
	1.6296D+02	4.2261D-02	7.4022D+01	9.5874D-02	-1.0412D+02
	1.6826D+00	1.4424D+02	1.4134D+00	-2.0355D+01	7.6572D-01
	1.0105D+02	2.2867D+00	1.6296D+02	0.0	0.0
	0.0	0.0	0.0	0.0	4.2261D-02
	7.4022D+01	9.5876D-02	-1.0412D+02	1.0386D-01	-7.0860D+01
	0.0	0.0	0.0	0.0	0.0
	0.0	9.7125D-02	-1.0414D+02	9.4092D-01	2.1536D+01
	1.1061D+00	2.8801D+01	9.5834D-02	-1.0405D+02	4.2312D-02
	-1.0614D+02	1.0711D+00	8.4894D+00	2.5130D+00	1.5907D+02
	9.4094D-01	2.1535D+01	1.1061D+00	2.8801D+01	0.0
	0.0	0.0	0.0	0.0	0.0
	9.5834D-02	-1.0405D+02	4.2307D-02	-1.0614D+02	1.1384D-01
	-7.3621D+01	0.0	0.0	0.0	0.0
	0.0	0.0	4.2833D-02	-1.0611D+02	4.6658D+00
	-1.2929D+01	8.6465D-01	4.2649D+01	4.2261D-02	-1.0598D+02
	9.5845D-02	7.5877D+01	8.4721D-01	1.9547D+01	1.4134D+00
	1.5965D+02	4.6658D+00	-1.2930D+01	8.6466D-01	4.2649D+01
	0.0	0.0	0.0	0.0	0.0
	0.0	4.2261D-02	-1.0598D+02	9.5876D-02	7.5881D+01
	1.0413D-01	-7.1471D+01	0.0000D-79	0.0000D-79	0.0000D-79
	0.0	0.0	0.0	9.7125D-02	7.5861D+01
	3.5828D+00	-1.0255D+01	2.6213D+00	1.6399D+02	9.5834D-02
	7.5954D+01	4.2191D-02	7.4178D+01	1.9312D+00	1.4573D+02
	2.5130D+00	-2.0932D+01	3.5828D+00	-1.0255D+01	2.6213D+00
	1.6399D+02	0.0	0.0	0.0	0.0
	0.0	0.0	9.5834D-02	7.5954D+01	4.2215D-02
	7.4187D+01	1.1384D-01	-7.3621D+01	0.0000D-79	0.0000D-79
	0.0000D-79	0.0	0.0	0.0	4.1345D-02
	7.5155D+01	7.2463D-02	-1.0609D+02	1.0400D-01	-7.1166D+01
	1.3618D-03	8.2250D+01	7.1298D-05	3.2507D+01	1.6262D-05
	4.6885D+00	4.7283D-01	-7.4585D+01	1.1893D+00	1.3661D+02
	9.9759D-01	1.4099D+02	2.1838D-01	1.7688D+02	1.7647D-01
	1.7829D+02	2.7566D-01	1.7620D+02	3.1929D+00	-1.7357D+02
	3.2679D+00	1.0487D+01	9.9759D-01	1.4099D+02	2.6206D+00
	1.7688D+02	2.1177D+00	1.7829D+02	3.3079D+00	1.7620D+02
	7.1	2.0000D+01			
	6.5038D-02	6.5288D+00	5.7150D-01	7.1838D+00	2.0516D+00
	1.7548D+02	6.3814D-02	6.4598D+00	1.2932D-01	-1.7276D+02
	1.9875D+00	1.7333D+02	7.0443D-01	-7.3522D+00	5.7149D-01
	7.1831D+00	2.0516D+00	1.7548D+02	0.0	0.0
	0.0	0.0	0.0	0.0	6.3814D-02
	6.4598D+00	1.2930D-01	-1.7277D+02	7.8945D-02	-2.0374D+01
	0.0	0.0	0.0	0.0	0.0
	0.0	1.3217D-01	-1.7265D+02	1.1078D+00	2.1313D-01
	9.4180D-01	8.0540D+00	1.2970D-01	-1.7272D+02	6.3445D-02
	-1.7363D+02	8.7947D-01	8.2251D+00	1.2494D+00	1.7276D+02
	1.1078D+00	2.1256D-01	9.4181D-01	8.0541D+00	0.0
	0.0	0.0	0.0	0.0	0.0

1.2970D-01	-1.7272D+02	6.3410D-02	-1.7364D+02	6.9205D-02
-2.5370D+01	0.0	0.0	0.0	0.0
0.0	0.0	6.5038D-02	-1.7347D+02	3.0556D+00
-4.5709D+00	6.7912D-01	1.2066D+01	6.3814D-02	-1.7354D+02
1.2921D-01	7.2271D+00	6.2674D-01	1.3180D+01	7.0443D-01
1.7265D+02	3.0555D+00	-4.5714D+00	6.7912D-01	1.2066D+01
0.0	0.0	0.0	0.0	0.0
0.0	6.3814D-02	-1.7354D+02	1.2930D-01	7.2322D+00
7.7048D-02	-2.0964D+01	0.0000D-79	0.0000D-79	0.0000D-79
0.0	0.0	0.0	1.3217D-01	7.3469D+00
2.5113D+00	-4.0225D+00	2.3200D+00	1.7576D+02	1.2970D-01
7.2766D+00	6.4146D-02	6.5440D+00	2.2380D+00	1.7368D+02
1.2494D+00	-7.2419D+00	2.5112D+00	-4.0230D+00	2.3200D+00
1.7576D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.2970D-01	7.2766D+00	6.4219D-02
6.5544D+00	6.9205D-02	-2.5370D+01	0.0000D-79	0.0000D-79
0.0000D-79	0.0	0.0	0.0	6.1593D-02
6.6099D+00	1.0673D-01	-1.7364D+02	7.7995D-02	-2.0665D+01
1.3325D-03	1.1506D+01	1.2875D-04	2.3053D+00	5.2265D-05
-1.5886D+02	4.6019D-01	-1.6976D+02	1.9863D-01	4.5089D+01
7.0705D-01	1.6761D+02	2.0290D-01	1.7930D+02	1.6934D-01
1.7959D+02	2.2606D-01	1.7727D+02	3.6199D+00	-1.7907D+02
3.9354D+00	1.3745D+00	7.0705D-01	1.6761D+02	2.4348D+00
1.7930D+02	2.0321D+00	1.7959D+02	2.7127D+00	1.7727D+02
8.1	2.2500D+01			
7.7996D-02	2.5223D+00	6.5252D-01	1.0689D+00	1.8107D+00
1.7819D+02	7.6190D-02	2.4071D+00	1.5647D-01	-1.7743D+02
1.6731D+00	1.7761D+02	5.3721D-01	-4.4895D+00	6.5249D-01
1.0679D+00	1.8107D+00	1.7819D+02	0.0	0.0
0.0	0.0	0.0	0.0	7.6190D-02
2.4071D+00	1.5641D-01	-1.7744D+02	3.8842D-02	-1.2419D+01
0.0	0.0	0.0	0.0	0.0
0.0	1.6090D-01	-1.7729D+02	1.0732D+00	-9.8866D-01
1.1103D+00	2.0961D+00	1.5719D-01	-1.7741D+02	7.5490D-02
-1.7765D+02	1.0170D+00	1.8064D+00	9.5897D-01	1.7565D+02
1.0732D+00	-9.8949D-01	1.1103D+00	2.0961D+00	0.0
0.0	0.0	0.0	0.0	0.0
-1.5719D-01	-1.7741D+02	7.5415D-02	-1.7766D+02	2.4751D-02
-2.1835D+01	0.0	0.0	0.0	0.0
0.0	0.0	7.7996D-02	-1.7748D+02	2.5683D+00
-2.9751D+00	8.6126D-01	3.0442D+00	7.6190D-02	-1.7759D+02
1.5626D-01	2.5540D+00	7.8536D-01	2.8567D+00	5.3721D-01
1.7551D+02	2.5682D+00	-2.9758D+00	8.6127D-01	3.0442D+00
0.0	0.0	0.0	0.0	0.0
0.0	7.6190D-02	-1.7759D+02	1.5641D-01	2.5612D+00
3.6724D-02	-1.3179D+01	0.0000D-79	0.0000D-79	0.0000D-79
0.0	0.0	0.0	1.6090D-01	2.7091D+00
2.1467D+00	-2.7398D+00	2.0602D+00	1.7827D+02	1.5719D-01
2.5933D+00	7.6835D-02	2.4607D+00	1.8995D+00	1.7771D+02
9.5897D-01	-4.3504D+00	2.1466D+00	-2.7405D+00	2.0602D+00
1.7827D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.5719D-01	2.5932D+00	7.6965D-02
2.4742D+00	2.4751D-02	-2.1835D+01	0.0000D-79	0.0000D-79
0.0000D-79	0.0	0.0	0.0	7.3839D-02
2.4674D+00	1.2715D-01	-1.7762D+02	3.7782D-02	-1.2788D+01
1.7368D-03	3.4777D+00	1.3600D-04	5.1306D-01	9.7505D-05
-1.7096D+02	6.0028D-01	-1.7644D+02	3.9567D-01	9.2435D+00
4.7764D-01	1.7382D+02	1.9805D-01	1.7961D+02	1.6687D-01
1.7976D+02	2.0121D-01	1.7784D+02	3.7196D+00	-1.7963D+02
4.0942D+00	5.3589D-01	4.7764D-01	1.7382D+02	2.3767D+00

1.7961D+02	2.0024D+00	1.7976D+02	2.4146D+00	1.7784D+02
9.1	2.5000D+01			
8.3868D-02	1.5141D+00	6.5962D-01	-1.1859D-01	1.7167D+00
1.7888D+02	8.1498D-02	1.3515D+00	1.6803D-01	-1.7857D+02
1.5623D+00	1.7858D+02	4.6436D-01	-3.2606D+00	6.5955D-01
-1.1995D-01	1.7167D+00	1.7888D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.1498D-02
1.3515D+00	1.6794D-01	-1.7858D+02	2.5234D-02	-1.0503D+01
0.0	0.0	0.0	0.0	0.0
0.0	1.7386D-01	-1.7839D+02	1.0283D+00	-1.1387D+00
1.1727D+00	1.0596D+00	1.6896D-01	-1.7855D+02	8.0595D-02
-1.7869D+02	1.0641D+00	8.5729D-01	8.3331D-01	1.7687D+02
1.0282D+00	-1.1398D+00	1.1727D+00	1.0596D+00	0.0
0.0	0.0	0.0	0.0	0.0
1.6896D-01	-1.7855D+02	8.0481D-02	-1.7870D+02	9.8740D-03
-3.1076D+01	0.0	0.0	0.0	0.0
0.0	0.0	8.3868D-02	-1.7849D+02	2.3257D+00
-2.2750D+00	9.3254D-01	1.5480D+00	8.1498D-02	-1.7865D+02
1.6773D-01	1.4148D+00	8.4416D-01	1.3833D+00	4.6436D-01
1.7674D+02	2.3255D+00	-2.2759D+00	9.3256D-01	1.5480D+00
0.0	0.0	0.0	0.0	0.0
0.0	8.1498D-02	-1.7865D+02	1.6794D-01	1.4244D+00
2.3082D-02	-1.1495D+01	0.0000D-79	0.0000D-79	0.0
0.0	0.0	0.0	1.7386D-01	1.6126D+00
1.9567D+00	-2.1454D+00	1.9570D+00	1.7891D+02	1.6896D-01
1.4496D+00	8.2326D-02	1.3863D+00	1.7784D+00	1.7863D+02
8.3331D-01	-3.1290D+00	1.9566D+00	-2.1463D+00	1.9570D+00
1.7891D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.6896D-01	1.4496D+00	8.2514D-02
1.4040D+00	9.8740D-03	-3.1076D+01	0.0000D-79	0.0000D-79
0.0	0.0	0.0	0.0	7.9128D-02
1.3921D+00	1.3595D-01	-1.7865D+02	2.4157D-02	-1.0977D+01
1.9083D-03	1.8652D+00	1.3700D-04	-4.9053D-03	1.2737D-04
-1.7439D+02	6.6244D-01	-1.7802D+02	4.9936D-01	4.4711D+00
3.9319D-01	1.7571D+02	1.9558D-01	1.7972D+02	1.6554D-01
1.7982D+02	1.8654D-01	1.7820D+02	3.7576D+00	-1.7980D+02
4.1552D+00	2.8816D-01	3.9319D-01	1.7571D+02	2.3469D+00
1.7972D+02	1.9865D+00	1.7982D+02	2.2385D+00	1.7820D+02
10.1	2.7500D+01			
8.7296D-02	1.1262D+00	6.5214D-01	-4.8714D-01	1.6665D+00
1.7918D+02	8.4331D-02	9.0724D-01	1.7422D-01	-1.7904D+02
1.5057D+00	1.7899D+02	4.2411D-01	-2.5801D+00	6.5204D-01
-4.8897D-01	1.6665D+00	1.7918D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.4331D-02
9.0721D-01	1.7409D-01	-1.7904D+02	1.8392D-02	-9.7831D+00
0.0	0.0	0.0	0.0	0.0
0.0	1.8142D-01	-1.7880D+02	9.9206D-01	-1.1115D+00
1.2035D+00	6.7532D-01	1.7527D-01	-1.7902D+02	8.3307D-02
-1.7912D+02	1.0862D+00	5.2671D-01	7.6411D-01	1.7754D+02
9.9193D-01	-1.1131D+00	1.2035D+00	6.7532D-01	0.0
0.0	0.0	0.0	0.0	0.0
1.7527D-01	-1.7902D+02	8.3151D-02	-1.7914D+02	3.6189D-03
-7.3284D+01	0.0	0.0	0.0	0.0
0.0	0.0	8.7296D-02	-1.7887D+02	2.1802D+00
-1.8693D+00	9.6877D-01	9.9936D-01	8.4331D-02	-1.7909D+02
1.7381D-01	9.4269D-01	8.7295D-01	8.7164D-01	4.2411D-01
1.7742D+02	2.1800D+00	-1.8705D+00	9.6878D-01	9.9936D-01
0.0	0.0	0.0	0.0	0.0
0.0	8.4331D-02	-1.7909D+02	1.7409D-01	9.5519D-01
1.6243D-02	-1.1064D+01	0.0000D-79	0.0000D-79	0.0

0.0	0.0	0.0	1.8142D-01	1.1954D+00
1.8402D+00	-1.7880D+00	1.9013D+00	1.7920D+02	1.7527D-01
9.7609D-01	8.5262D-02	9.2766D-01	1.7161D+00	1.7902D+02
7.6411D-01	-2.4599D+00	1.8400D+00	-1.7893D+00	1.9014D+00
1.7920D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.7527D-01	9.7607D-01	8.5510D-02
9.5067D-01	3.6189D-03	-7.3284D+01	0.0000D-79	0.0000D-79
0.0	0.0	0.0	0.0	8.1971D-02
9.3933D-01	1.4068D-01	-1.7909D+02	1.7317D-02	-1.0384D+01
1.9995D-03	1.2352D+00	1.3644D-04	-2.0812D-01	1.4767D-04
-1.7595D+02	6.9639D-01	-1.7867D+02	5.5673D-01	2.8388D+00
3.4946D-01	1.7666D+02	1.9404D-01	1.7977D+02	1.6469D-01
1.7985D+02	1.7699D-01	1.7845D+02	3.7759D+00	-1.7988D+02
4.1846D+00	1.8084D-01	3.4946D-01	1.7666D+02	2.3285D+00
1.7977D+02	1.9763D+00	1.7985D+02	2.1239D+00	1.7845D+02
11.1	3.0000D+01			
8.9654D-02	9.5887D-01	6.4232D-01	-6.1787D-01	1.6354D+00
1.7935D+02	8.6049D-02	6.7236D-01	1.7799D-01	-1.7928D+02
1.4715D+00	1.7922D+02	3.9885D-01	-2.1477D+00	6.4219D-01
-6.2026D-01	1.6354D+00	1.7935D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.6049D-02
6.7233D-01	1.7783D-01	-1.7929D+02	1.4302D-02	-9.5005D+00
0.0	0.0	0.0	0.0	0.0
0.0	1.8662D-01	-1.7899D+02	9.6422D-01	-1.0464D+00
1.2213D+00	4.8450D-01	1.7913D-01	-1.7927D+02	8.4954D-02
-1.7934D+02	1.0985D+00	3.6806D-01	7.2077D-01	1.7796D+02
9.6405D-01	-1.0484D+00	1.2214D+00	4.8450D-01	0.0
0.0	0.0	0.0	0.0	0.0
1.7913D-01	-1.7927D+02	8.4754D-02	-1.7937D+02	4.3030D-03
-1.4255D+02	0.0	0.0	0.0	0.0
0.0	0.0	8.9654D-02	-1.7904D+02	2.0839D+00
-1.5996D+00	9.9026D-01	7.2709D-01	8.6049D-02	-1.7933D+02
1.7748D-01	6.9302D-01	8.8966D-01	6.2470D-01	3.9885D-01
1.7785D+02	2.0836D+00	-1.6012D+00	9.9027D-01	7.2709D-01
0.0	0.0	0.0	0.0	0.0
0.0	8.6049D-02	-1.7933D+02	1.7783D-01	7.0907D-01
1.2167D-02	-1.1133D+01	0.0000D-79	0.0000D-79	0.0
0.0	0.0	0.0	1.8662D-01	1.0137D+00
1.7619D+00	-1.5445D+00	1.8665D+00	1.7936D+02	1.7913D-01
7.2700D-01	8.7032D-02	6.8010D-01	1.6781D+00	1.7924D+02
7.2077D-01	-2.0382D+00	1.7617D+00	-1.5461D+00	1.8665D+00
1.7936D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.7913D-01	7.2697D-01	8.7345D-02
7.0958D-01	4.3030D-03	-1.4255D+02	0.0000D-79	0.0000D-79
0.0	0.0	0.0	0.0	8.3706D-02
6.9952D-01	1.4358D-01	-1.7932D+02	1.3233D-02	-1.0251D+01
2.0550D-03	9.1260D-01	1.3549D-04	-2.9907D-01	1.6209D-04
-1.7682D+02	7.1738D-01	-1.7901D+02	5.9236D-01	2.0540D+00
3.2293D-01	1.7725D+02	1.9298D-01	1.7981D+02	1.6409D-01
1.7987D+02	1.7036D-01	1.7863D+02	3.7858D+00	-1.7992D+02
4.2008D+00	1.2437D-01	3.2293D-01	1.7725D+02	2.3158D+00
1.7981D+02	1.9691D+00	1.7987D+02	2.0443D+00	1.7863D+02
12.1	3.2500D+01			
9.1480D-02	8.9586D-01	6.3308D-01	-6.6013D-01	1.6143D+00
1.7946D+02	8.7182D-02	5.3027D-01	1.8051D-01	-1.7943D+02
1.4487D+00	1.7936D+02	3.8168D-01	-1.8479D+00	6.3291D-01
-6.6317D-01	1.6143D+00	1.7946D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.7182D-02
5.3023D-01	1.8031D-01	-1.7944D+02	1.1602D-02	-9.4208D+00
0.0	0.0	0.0	0.0	0.0

98	0.0	1.9063D-01	-1.7906D+02	9.4275D-01	-9.7642D-01
	1.2327D+00	3.7350D-01	1.8169D-01	-1.7942D+02	8.6049D-02
	-1.7948D+02	1.1062D+00	2.7788D-01	6.9134D-01	1.7825D+02
	9.4255D-01	-9.7893D-01	1.2328D+00	3.7350D-01	0.0
	0.0	0.0	0.0	0.0	0.0
	1.8169D-01	-1.7942D+02	8.5801D-02	-1.7950D+02	6.7015D-03
	-1.6171D+02	0.0	0.0	0.0	0.0
	0.0	0.0	9.1480D-02	-1.7910D+02	2.0159D+00
	-1.4052D+00	1.0043D+00	5.6811D-01	8.7182D-02	-1.7947D+02
	1.7988D-01	5.4040D-01	9.0039D-01	4.8300D-01	3.8168D-01
	1.7815D+02	2.0155D+00	-1.4072D+00	1.0043D+00	5.6811D-01
	0.0	0.0	0.0	0.0	0.0
	0.0	8.7182D-02	-1.7947D+02	1.8031D-01	5.6063D-01
	9.4834D-03	-1.1473D+01	0.0000D-79	0.0000D-79	0.0
	0.0	0.0	0.0	1.9063D-01	9.4314D-01
	1.7062D+00	-1.3657D+00	1.8428D+00	1.7947D+02	1.8169D-01
	5.7639D-01	8.8182D-02	5.2580D-01	1.6527D+00	1.7937D+02
	6.9134D-01	-1.7477D+00	1.7058D+00	-1.3678D+00	1.8428D+00
	1.7947D+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.8169D-01	5.7635D-01	8.8563D-02
	5.6296D-01	6.7015D-03	-1.6171D+02	0.0000D-79	0.0000D-79
	0.0	0.0	0.0	0.0	8.4855D-02
	5.5412D-01	1.4550D-01	-1.7946D+02	1.0541D-02	-1.0344D+01
	2.0918D-03	7.2042D-01	1.3451D-04	-3.4102D-01	1.7274D-04
	-1.7737D+02	7.3145D-01	-1.7921D+02	6.1630D-01	1.6034D+00
	3.0527D-01	1.7764D+02	1.9222D-01	1.7983D+02	1.6366D-01
	1.7989D+02	1.6552D-01	1.7877D+02	3.7917D+00	-1.7994D+02
	4.2105D+00	9.0954D-02	3.0527D-01	1.7764D+02	2.3066D+00
	1.7983D+02	1.9639D+00	1.7989D+02	1.9863D+00	1.7877D+02
	13.1	3.5000D+01			
	9.3022D-02	8.9687D-01	6.2505D-01	-6.6490D-01	1.5992D+00
	1.7954D+02	8.7975D-02	4.3627D-01	1.8229D-01	-1.7952D+02
	1.4325D+00	1.7945D+02	3.6934D-01	-1.6273D+00	6.2484D-01
	-6.6870D-01	1.5992D+00	1.7954D+02	0.0	0.0
	0.0	0.0	0.0	0.0	8.7974D-02
	4.3622D-01	1.8204D-01	-1.7954D+02	9.7015D-03	-9.4464D+00
	0.0	0.0	0.0	0.0	0.0
	0.0	1.9401D-01	-1.7906D+02	9.2596D-01	-9.1041D-01
	1.2405D+00	3.0211D-01	1.8349D-01	-1.7952D+02	8.6826D-02
	-1.7956D+02	1.1113D+00	2.2090D-01	6.7022D-01	1.7846D+02
	9.2571D-01	-9.1354D-01	1.2405D+00	3.0211D-01	0.0
	0.0	0.0	0.0	0.0	0.0
	1.8349D-01	-1.7952D+02	8.6528D-02	-1.7959D+02	8.6211D-03
	-1.6821D+02	0.0	0.0	0.0	0.0
	0.0	0.0	9.3022D-02	-1.7910D+02	1.9657D+00
	-1.2572D+00	1.0140D+00	4.6525D-01	8.7975D-02	-1.7956D+02
	1.8153D-01	4.3735D-01	9.0777D-01	3.9243D-01	3.6934D-01
	1.7837D+02	1.9652D+00	-1.2597D+00	1.0140D+00	4.6525D-01
	0.0	0.0	0.0	0.0	0.0
	0.0	8.7974D-02	-1.7956D+02	1.8204D-01	4.6247D-01
	7.5983D-03	-1.1993D+01	0.0000D-79	0.0000D-79	0.0000D-79
	0.0	0.0	0.0	1.9401D-01	9.3730D-01
	1.6647D+00	-1.2277D+00	1.8257D+00	-1.7954D+02	1.8349D-01
	4.7658D-01	8.8967D-02	4.1937D-01	1.6346D+00	1.7946D+02
	6.7022D-01	-1.5351D+00	1.6644D+00	-1.2303D+00	1.8257D+00
	1.7954D+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.8349D-01	4.7653D-01	8.9420D-02
	4.6550D-01	8.6211D-03	-1.6821D+02	0.0000D-79	0.0000D-79
	0.0000D-79	0.0	0.0	0.0	8.5663D-02
	4.5767D-01	1.4685D-01	-1.7955D+02	8.6478D-03	-1.0565D+01

2.1177D-03	5.9425D-01	1.3360D-04	-3.5890D-01	1.8085D-04
-1.7775D+02	7.4144D-01	-1.7934D+02	6.3333D-01	1.3148D+00
2.9277D-01	1.7793D+02	1.9164D-01	1.7985D+02	1.6332D-01
1.7990D+02	1.6188D-01	1.7888D+02	3.7955D+00	-1.7995D+02
4.2168D+00	6.9540D-02	2.9277D-01	1.7793D+02	2.2997D+00
1.7985D+02	1.9599D+00	1.7990D+02	1.9425D+00	1.7888D+02
14.1	3.7500D+01			
9.4410D-02	9.3987D-01	6.1823D-01	-6.5275D-01	1.5879D+00
1.7959D+02	8.8553D-02	3.6997D-01	1.8360D-01	-1.7959D+02
1.4205D+00	1.7952D+02	3.6011D-01	-1.4579D+00	6.1799D-01
-6.5744D-01	1.5879D+00	1.7959D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.8553D-02
3.6991D-01	1.8331D-01	-1.7961D+02	8.2998D-03	-9.5290D+00
0.0	0.0	0.0	0.0	0.0
0.0	1.9703D-01	-1.7902D+02	9.1260D-01	-8.5061D-01
1.2461D+00	2.5287D-01	1.8481D-01	-1.7959D+02	8.7407D-02
-1.7962D+02	1.1150D+00	1.8219D-01	6.5443D-01	1.7863D+02
9.1230D-01	-8.5444D-01	1.2461D+00	2.5287D-01	0.0
0.0	0.0	0.0	0.0	0.0
1.8481D-01	-1.7959D+02	8.7056D-02	-1.7966D+02	1.0085D-02
-1.7134D+02	0.0	0.0	0.0	0.0
0.0	0.0	9.4410D-02	-1.7906D+02	1.9273D+00
-1.1402D+00	1.0211D+00	3.9381D-01	8.8553D-02	-1.7963D+02
1.8272D-01	3.6239D-01	9.1311D-01	3.3011D-01	3.6011D-01
1.7854D+02	1.9268D+00	-1.1432D+00	1.0211D+00	3.9382D-01
0.0	0.0	0.0	0.0	0.0
0.0	8.8553D-02	-1.7963D+02	1.8331D-01	3.9314D-01
6.2114D-03	-1.2652D+01	0.0000D-79	0.0000D-79	0.0000D-79
0.0	0.0	0.0	1.9703D-01	9.7597D-01
1.6330D+00	-1.1175D+00	1.8129D+00	1.7960D+02	1.6481D-01
4.0595D-01	8.9519D-02	3.4000D-01	1.6211D+00	1.7953D+02
6.5443D-01	-1.3725D+00	1.6325D+00	-1.1207D+00	1.8129D+00
1.7960D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.8481D-01	4.0589D-01	9.0050D-02
3.9646D-01	1.0085D-02	-1.7134D+02	0.0000D-79	0.0000D-79
0.0000D-79	0.0	0.0	0.0	8.6256D-02
3.8946D-01	1.4785D-01	-1.7962D+02	7.2530D-03	-1.0866D+01
2.1367D-03	5.0554D-01	1.3280D-04	-3.6410D-01	1.8718D-04
-1.7803D+02	7.4884D-01	-1.7944D+02	6.4595D-01	1.1156D+00
2.8352D-01	1.7815D+02	1.9119D-01	1.7986D+02	1.6306D-01
1.7991D+02	1.5905D-01	1.7897D+02	3.7980D+00	-1.7996D+02
4.2210D+00	5.5015D-02	2.8352D-01	1.7815D+02	2.2943D+00
1.7986D+02	1.9567D+00	1.7991D+02	1.9086D+00	1.7897D+02
15.1	4.0000D+01			
9.5720D-02	1.0168D+00	6.1249D-01	-6.3293D-01	1.5791D+00
1.7964D+02	8.8990D-02	3.2089D-01	1.8461D-01	-1.7964D+02
1.4113D+00	1.7957D+02	3.5299D-01	-1.3234D+00	6.1220D-01
-6.3861D-01	1.5791D+00	1.7964D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.8990D-02
3.2081D-01	1.8428D-01	-1.7966D+02	7.2299D-03	-9.6421D+00
0.0	0.0	0.0	0.0	0.0
0.0	1.9986D-01	-1.7895D+02	9.0181D-01	-7.9709D-01
1.2503D+00	2.1712D-01	1.8582D-01	-1.7965D+02	8.7860D-02
-1.7966D+02	1.1176D+00	1.5444D-01	6.4226D-01	1.7876D+02
9.0146D-01	-8.0174D-01	1.2503D+00	2.1712D-01	0.0
0.0	0.0	0.0	0.0	0.0
1.8581D-01	-1.7965D+02	8.7452D-02	-1.7970D+02	1.1217D-02
-1.7316D+02	0.0	0.0	0.0	0.0
0.0	0.0	9.5720D-02	-1.7898D+02	1.8973D+00
-1.0449D+00	1.0265D+00	3.4155D-01	8.8990D-02	-1.7968D+02

	1.8359D-01	3.0454D-01	9.1711D-01	2.8486D-01	3.5299D-01
	1.7868D+02	1.8967D+00	-1.0486D+00	1.0265D+00	3.4155D-01
	0.0	0.0	0.0	0.0	0.0
	0.0	8.8990D-02	-1.7968D+02	1.8428D-01	3.4170D-01
∞	5.1553D-03	-1.3433D+01	0.0000D-79	0.0000D-79	0.0
∞	0.0	0.0	0.0	1.9986D-01	1.0495D+00
	1.6080D+00	-1.0270D+00	1.8030D+00	1.7964D+02	1.8582D-01
	3.5345D-01	8.9915D-02	2.7690D-01	1.6108D+00	1.7958D+02
	6.4226D-01	-1.2439D+00	1.6074D+00	-1.0309D+00	1.8030D+00
	1.7964D+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.8581D-01	3.5338D-01	9.0527D-02
	3.4515D-01	1.1217D-02	-1.7316D+02	0.0000D-79	0.0000D-79
	0.0	0.0	0.0	0.0	8.6705D-02
	3.3882D-01	1.4860D-01	-1.7967D+02	6.1893D-03	-1.1220D+01
	2.1511D-03	4.3991D-01	1.3210D-04	-3.6234D-01	1.9223D-04
	-1.7825D+02	7.5450D-01	-1.7951D+02	6.5562D-01	9.7047D-01
	2.7644D-01	1.7833D+02	1.9083D-01	1.7987D+02	1.6285D-01
	1.7991D+02	1.5681D-01	1.7905D+02	3.7997D+00	-1.7997D+02
	4.2240D+00	4.4730D-02	2.7644D-01	1.7833D+02	2.2899D+00
	1.7987D+02	1.9542D+00	1.7991D+02	1.8817D+00	1.7905D+02
	16.1	4.2500D+01			
	9.6996D-02	1.1233D+00	6.0764D-01	-6.0987D-01	1.5722D+00
	1.7967D+02	8.9329D-02	2.8314D-01	1.8541D-01	-1.7967D+02
	1.4041D+00	1.7961D+02	3.4736D-01	-1.2139D+00	6.0730D-01
	-6.1667D-01	1.5722D+00	1.7967D+02	0.0	0.0
	0.0	0.0	0.0	0.0	8.9328D-02
	2.8305D-01	1.8502D-01	-1.7970D+02	6.3910D-03	-9.7701D+00
	0.0	0.0	0.0	0.0	0.0
	0.0	2.0260D-01	-1.7885D+02	8.9297D-01	-7.4932D-01
	1.2535D+00	1.9011D-01	1.8660D-01	-1.7969D+02	8.8225D-02
	-1.7968D+02	1.1197D+00	1.3372D-01	6.3263D-01	1.7886D+02
	8.9257D-01	-7.5488D-01	1.2535D+00	1.9011D-01	0.0
	0.0	0.0	0.0	0.0	0.0
	1.8660D-01	-1.7969D+02	8.7758D-02	-1.7974D+02	1.2112D-02
	-1.7434D+02	0.0	0.0	0.0	0.0
	0.0	0.0	9.6996D-02	-1.7888D+02	1.8732D+00
	-9.6565D-01	1.0306D+00	3.0177D-01	8.9329D-02	-1.7972D+02
	1.8424D-01	2.5760D-01	9.2020D-01	2.5063D-01	3.4736D-01
	1.7879D+02	1.8726D+00	-9.7000D-01	1.0306D+00	3.0177D-01
	0.0	0.0	0.0	0.0	0.0
	0.0	8.9328D-02	-1.7972D+02	1.8502D-01	3.0200D-01
	4.3291D-03	-1.4329D+01	0.0000D-79	0.0000D-79	0.0000D-79
	0.0	0.0	0.0	2.0260D-01	1.1531D+00
	1.5879D+00	-9.5116D-01	1.7951D+00	1.7967D+02	1.8660D-01
	3.1289D-01	9.0201D-02	2.2398D-01	1.6026D+00	1.7962D+02
	6.3263D-01	-1.1396D+00	1.5873D+00	-9.5579D-01	1.7951D+00
	1.7967D+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.8660D-01	3.1280D-01	9.0899D-02
	3.0555D-01	1.2112D-02	-1.7434D+02	0.0000D-79	0.0000D-79
	0.0000D-79	0.0	0.0	0.0	8.7054D-02
	2.9976D-01	1.4919D-01	-1.7971D+02	5.3560D-03	-1.1611D+01
	2.1624D-03	3.8939D-01	1.3149D-04	-3.5675D-01	1.9633D-04
	-1.7841D+02	7.5894D-01	-1.7956D+02	6.6321D-01	8.6037D-01
	2.7088D-01	1.7847D+02	1.9054D-01	1.7988D+02	1.6268D-01
	1.7992D+00	1.5499D-01	1.7912D+02	3.8010D+00	-1.7998D+02
	4.2262D+00	3.7201D-02	2.7088D-01	1.7847D+02	2.2864D+00
	1.7988D+02	1.9521D+00	1.7992D+02	1.8599D+00	1.7912D+02
	17.1	4.5000D+01			
	9.8269D-02	1.2573D+00	6.0352D-01	-5.8580D-01	1.5666D+00
	1.7970D+02	8.9598D-02	2.5319D-01	1.8606D-01	-1.7970D+02



1.3982D+00	1.7965D+02	3.4282D-01	-1.1230D+00	6.0314D-01
-5.9385D-01	1.5666D+00	1.7970D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.9597D-02
2.5308D-01	1.8562D-01	-1.7973D+02	5.7187D-03	-9.9031D+00
0.0	0.0	0.0	0.0	0.0
0.0	2.0533D-01	-1.7872D+02	8.8564D-01	-7.0659D-01
1.2560D+00	1.6905D-01	1.8722D-01	-1.7972D+02	8.8529D-02
-1.7970D+02	1.1212D+00	1.1774D-01	6.2487D-01	1.7895D+02
8.8519D-01	-7.1317D-01	1.2560D+00	1.6905D-01	0.0
0.0	0.0	0.0	0.0	0.0
1.8722D-01	-1.7972D+02	8.8000D-02	-1.7977D+02	1.2831D-02
-1.7516D+02	0.0	0.0	0.0	0.0
0.0	0.0	9.8269D-02	-1.7874D+02	1.8536D+00
-8.9850D-01	1.0339D+00	2.7051D-01	8.9598D-02	-1.7975D+02
1.8474D-01	2.1785D-01	9.2264D-01	2.2389D-01	3.4282D-01
1.7888D+02	1.8529D+00	-9.0365D-01	1.0340D+00	2.7051D-01
0.0	0.0	0.0	0.0	0.0
0.0	8.9597D-02	-1.7975D+02	1.8562D-01	2.7037D-01
3.6689D-03	-1.5343D+01	0.0000D-79	0.0000D-79	0.0
0.0	0.0	0.0	2.0533D-01	1.2847D+00
1.5715D+00	-8.8659D-01	1.7887D+00	1.7970D+02	1.8722D-01
2.8055D-01	9.0407D-02	1.7754D-01	1.5960D+00	1.7965D+02
6.2487D-01	-1.0532D+00	1.5708D+00	-8.9204D-01	1.7887D+00
1.7970D+02	0.0	0.0	0.0	0.0
0.0	0.0	1.8722D-01	2.8044D-01	9.1194D-02
2.7404D-01	1.2831D-02	-1.7516D+02	0.0000D-79	0.0000D-79
0.0	0.0	0.0	0.0	8.7332D-02
2.6870D-01	1.4965D-01	-1.7974D+02	4.6887D-03	-1.2029D+01
2.1714D-03	3.4924D-01	1.3096D-04	-3.4908D-01	1.9970D-04
-1.7855D+02	7.6250D-01	-1.7960D+02	6.6931D-01	7.7416D-01
2.6641D-01	1.7858D+02	1.9030D-01	1.7989D+02	1.6253D-01
1.7993D+02	1.5350D-01	1.7917D+02	3.8019D+00	-1.7998D+02
4.2278D+00	3.1544D-02	2.6641D-01	1.7858D+02	2.2835D+00
1.7989D+02	1.9504D+00	1.7993D+02	1.8420D+00	1.7917D+02
18.1	4.7500D+01			
9.9560D-02	1.4181D+00	6.0001D-01	-5.6185D-01	1.5620D+00
1.7972D+02	8.9815D-02	2.2880D-01	1.8659D-01	-1.7972D+02
1.3934D+00	1.7967D+02	3.3909D-01	-1.0462D+00	5.9958D-01
-5.7129D-01	1.5620D+00	1.7972D+02	0.0	0.0
0.0	0.0	0.0	0.0	8.9814D-02
2.2867D-01	1.8610D-01	-1.7976D+02	5.1702D-03	-1.0035D+01
0.0	0.0	0.0	0.0	0.0
0.0	2.0808D-01	-1.7856D+02	8.7950D-01	-6.6823D-01
1.2580D+00	1.5220D-01	1.8772D-01	-1.7975D+02	8.8789D-02
-1.7971D+02	1.1225D+00	1.0507D-01	6.1850D-01	1.7902D+02
8.7898D-01	-6.7594D-01	1.2581D+00	1.5221D-01	0.0
0.0	0.0	0.0	0.0	0.0
1.8772D-01	-1.7975D+02	8.8194D-02	-1.7979D+02	1.3418D-02
-1.7576D+02	0.0	0.0	0.0	0.0
0.0	0.0	9.9560D-02	-1.7858D+02	1.8374D+00
-8.4080D-01	1.0366D+00	2.4533D-01	8.9815D-02	-1.7977D+02
1.8511D-01	1.8294D-01	9.2461D-01	2.0244D-01	3.3909D-01
1.7895D+02	1.8366D+00	-8.4683D-01	1.0366D+00	2.4533D-01
0.0	0.0	0.0	0.0	0.0
0.0	8.9814D-02	-1.7977D+02	1.8610D-01	2.4449D-01
3.1318D-03	-1.6481D+01	0.0000D-79	0.0000D-79	0.0000D-79
0.0	0.0	0.0	2.0808D-01	1.4435D+00
1.5579D+00	-8.3080D-01	1.7835D+00	1.7972D+02	1.8772D-01
2.5406D-01	9.0551D-02	1.3517D-01	1.5906D+00	1.7968D+02
6.1850D-01	-9.8039D-01	1.5572D+00	-8.3720D-01	1.7835D+00

06	1.7972D+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.8772D-01	2.5393D-01	9.1434D-02
	2.4831D-01	1.3418D-02	-1.7576D+02	0.0000D-79	0.0000D-79
	0.0000D-79	0.0	0.0	0.0	8.7556D-02
	2.4334D-01	1.5003D-01	-1.7976D+02	4.1448D-03	-1.2466D+01
	2.1786D-03	3.1646D-01	1.3050D-04	-3.4039D-01	2.0252D-04
	-1.7866D+02	7.6540D-01	-1.7964D+02	6.7428D-01	7.0495D-01
	2.6277D-01	1.7868D+02	1.9009D-01	1.7990D+02	1.6242D-01
	1.7993D+02	1.5226D-01	1.7922D+02	3.8026D+00	-1.7998D+02
	4.2290D+00	2.7203D-02	2.6277D-01	1.7868D+02	2.2811D+00
	1.7990D+02	1.9490D+00	1.7993D+02	1.8271D+00	1.7922D+02
	19.1	5.0000D+01			
	1.0088D-01	1.6062D+00	5.9700D-01	-5.3858D-01	1.5582D+00
	1.7974D+02	8.9992D-02	2.0848D-01	1.8704D-01	-1.7974D+02
	1.3895D+00	1.7970D+02	3.3599D-01	-9.8052D-01	5.9652D-01
	-5.4956D-01	1.5582D+00	1.7974D+02	0.0	0.0
	0.0	0.0	0.0	0.0	8.9991D-02
	2.0832D-01	1.8649D-01	-1.7978D+02	4.7160D-03	-1.0161D+01
	0.0	0.0	0.0	0.0	0.0
	0.0	2.1089D-01	-1.7837D+02	8.7430D-01	-6.3364D-01
	1.2597D+00	1.3844D-01	1.8813D-01	-1.7977D+02	8.9016D-02
	-1.7972D+02	1.1235D+00	9.4814D-02	6.1319D-01	1.7908D+02
	8.7372D-01	-6.4261D-01	1.2597D+00	1.3844D-01	0.0
	0.0	0.0	0.0	0.0	0.0
	1.8813D-01	-1.7977D+02	8.8352D-02	-1.7981D+02	1.3905D-02
	-1.7623D+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.0088D-01	-1.7839D+02	1.8238D+00
	-7.9061D-01	1.0388D+00	2.2462D-01	8.9992D-02	-1.7979D+02
	1.8540D-01	1.5127D-01	9.2623D-01	1.8487D-01	3.3599D-01
	1.7902D+02	1.8229D+00	-7.9762D-01	1.0388D+00	2.2462D-01
	0.0	0.0	0.0	0.0	0.0
	0.0	8.9991D-02	-1.7979D+02	1.8649D-01	2.2281D-01
	2.6885D-03	-1.7757D+01	0.0000D-79	0.0000D-79	0.0
	0.0	0.0	0.0	2.1089D-01	1.6296D+00
	1.5465D+00	-7.8208D-01	1.7791D+00	1.7974D+02	1.8813D-01
	2.3186D-01	9.0649D-02	9.5283D-02	1.5861D+00	1.7970D+02
	6.1319D-01	-9.1828D-01	1.5457D+00	-7.8951D-01	1.7791D+00
	1.7974D+02	0.0	0.0	0.0	0.0
	0.0	0.0	1.8813D-01	2.3170D-01	9.1630D-02
	2.2684D-01	1.3905D-02	-1.7623D+02	0.0000D-79	0.0000D-79
	0.0	0.0	0.0	0.0	8.7741D-02
	2.2216D-01	1.5034D-01	-1.7978D+02	3.6948D-03	-1.2918D+01
	2.1846D-03	2.8908D-01	1.3010D-04	-3.3130D-01	2.0490D-04
	-1.7876D+02	7.6781D-01	-1.7967D+02	6.7841D-01	6.4825D-01
	2.5975D-01	1.7877D+02	1.8992D-01	1.7990D+02	1.6231D-01
	1.7993D+02	1.5121D-01	1.7926D+02	3.8031D+00	-1.7999D+02
	4.2300D+00	2.3816D-02	2.5975D-01	1.7877D+02	2.2791D+00
	1.7990D+02	1.9478D+00	1.7993D+02	1.8146D+00	1.7926D+02

APPENDIX D. BASE PROGRAM TEST CASE 12

```
*****
*
*   SIMVIB PROGRAM
*
*   INPUT AND INTERNAL CALCULATIONS
*   EMPLOY STANDARD UNITS
*   (FOOT, POUND, SECOND)
*
*****
```

```
SIMVIB CHECK CASE 12 FOR CDC COMPUTER
E-927 MATRICES - 5 MODE SHAPES
REAL EIGENSOLUTION - EG2 MODE
FREQUENCY (HZ)
```

# INPUT DECK CARD IMAGE LISTING

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92	RE2	1	0	/* COUPLED RUN WITH E-927	*/ 0006000
	1 /	0.0	0.0	/* DO NOT EXECUTE E-927	*/ 0007000
	2 /	4.000D+00	0.0	/* CONNECTION NODE	*/ 0008000
	-3 /	0.0	0.0	/* EULER ANGLES	*/ 0009000

	MS1	2	0	/* MODAL STRUCTURE TYPE1	*/ 0011000
	1 /	2.060D-02	0.0	/* DAMPING RATIO	*/ 0012000
	2 /	1.156D+02	0.0	/* GENER. MASS LB-SEC**2/IN	*/ 0013000
	3 /	4.780D+00	0.0	/* MODAL FREQUENCY HZ	*/ 0014000
	4 /	1.000D+00	0.0	/* NUMBER OF NODES	*/ 0015000
	5 /	4.000D+00	0.0	/* NODE NUMBERS	*/ 0016000
	10 /	0.0	-1.000D+00	/* MODE SHAPE	*/ 0017000
	13 /	0.0	0.0	/* MODE SHAPE	*/ 0018000
	-40 /	0.0	0.0	/* EULER ANGLES	*/ 0019000

	MS1	3	0	/* MODAL STRUCTURE TYPE1	*/ 0021000
	1 /	1.720D-02	0.0	/* DAMPING RATIO	*/ 0022000
	2 /	1.690D+02	0.0	/* GENER. MASS LB-SEC**2/IN	*/ 0023000
	3 /	6.130D+00	0.0	/* MODAL FREQUENCY HZ	*/ 0024000
	4 /	1.000D+00	0.0	/* NUMBER OF NODES	*/ 0025000
	5 /	4.000D+00	0.0	/* NODE NUMBERS	*/ 0026000
	10 /	1.000D+00	0.0	/* MODE SHAPE	*/ 0027000
	13 /	0.0	0.0	/* MODE SHAPE	*/ 0028000
	-40 /	0.0	0.0	/* EULER ANGLES	*/ 0029000

	MS1	4	0	/* MODAL STRUCTURE TYPE1	*/ 0031000
	1 /	7.650D-02	0.0	/* DAMPING RATIO	*/ 0032000
	2 /	3.708D+00	0.0	/* GENER. MASS LB-SEC**2/IN	*/ 0033000
	3 /	1.553D+01	0.0	/* MODAL FREQUENCY HZ	*/ 0034000
	4 /	1.000D+00	0.0	/* NUMBER OF NODES	*/ 0035000
	5 /	4.000D+00	0.0	/* NODE NUMBERS	*/ 0036000
	10 /	1.000D+00	2.000D-01	/* MODE SHAPE	*/ 0037000
	13 /	0.0	1.560D-03	/* MODE SHAPE	*/ 0038000
	-40 /	0.0	0.0	/* EULER ANGLES	*/ 0039000

	MS1	5	0	/* MODAL STRUCTURE TYPE1	*/ 0041000
	1 /	3.670D-02	0.0	/* DAMPING RATIO	*/ 0042000
	2 /	4.691D+00	0.0	/* GENER. MASS LB-SEC**2/IN	*/ 0043000
	3 /	1.710D+01	0.0	/* MODAL FREQUENCY HZ	*/ 0044000
	4 /	1.000D+00	0.0	/* NUMBER OF NODES	*/ 0045000
	5 /	4.000D+00	0.0	/* NODE NUMBERS	*/ 0046000
	10 /	0.0	-1.000D+00	/* MODE SHAPE	*/ 0047000
	13 /	1.520D-03	0.0	/* MODE SHAPE	*/ 0048000
	-40 /	0.0	0.0	/* EULER ANGLES	*/ 0049000

	MS1	6	0	/* MODAL STRUCTURE TYPE1	*/ 0051000
	1 /	4.550D-02	0.0	/* DAMPING RATIO	*/ 0052000
	2 /	2.534D+01	0.0	/* GENER. MASS LB-SEC**2/IN	*/ 0053000
	3 /	1.959D+01	0.0	/* MODAL FREQUENCY HZ	*/ 0054000
	4 /	1.000D+00	0.0	/* NUMBER OF NODES	*/ 0055000
	5 /	4.000D+00	0.0	/* NODE NUMBERS	*/ 0056000
	10 /	3.100D-01	1.000D+00	/* MODE SHAPE	*/ 0057000
	13 /	0.0	-9.030D-03	/* MODE SHAPE	*/ 0058000
	-40 /	0.0	0.0	/* EULER ANGLES	*/ 0059000

EG2	7	0	/* REAL EIGENSOLUTION TYPE 2	*/ 0061000
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-1 / 0.0      0.0      0.0      /* DO NOT USE DEBUG OPTION */ 0062000
GEN      8      0      /* GENERAL ELEMENT */ 0064000
1 / 0.0      0.0      0.0      /* SUPPRESS FINAL RESULTS */ 0065000
-2 / 1.0000+00 0.0      0.0      /* DO NOT SUPPRESS INPUT LISTS*/ 0066000
STOP

```

COMPONENT:ROTOREL2

\*\*\*\*\* ELASTIC ROTOR TYPE 2 \*\*\*\*\*

ELEMENT: 1

```

1 IEXEC E927 EXECUTION CONTROL FLAG 1
= 0 READ ROTOR MATRICES FROM INPUT FILE. DO NOT RUN E927.
= 1 RUN E927 TO CALCULATE ROTOR MATRICES AND READ THESE MATRICES FROM FILE.
(THIS OPTION IS NOT AVAILABLE)

```

2 NCN ROTOR CONNECTION NODE NUMBER 4

3 THETA EULER PITCH ANGLE - ROTATE SECOND ABOUT THE Y-AXIS (DEGREES) 0.0

4 PHI EULER ROLL ANGLE - ROTATE THIRD ABOUT THE X-AXIS (DEGREES) 0.0

5 XSI EULER YAW ANGLE - ROTATE FIRST ABOUT THE Z-AXIS (DEGREES) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

2

1 ZETA DAMPING RATIO (ND) 2.06000D-02  
 2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 1.15600D+02  
 3 OMEGA MODE FREQUENCY (HERTZ) 4.78000D+00  
 4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1  
 5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE  
 4 0 0 0 0  
 10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:  

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	0.0	-1.00000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

 40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:  
 THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)  
 PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)  
 XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)  

			THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0	0.0

 55 --- EMPTY LOCATION  
 56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0  
 57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 3

1 ZETA DAMPING RATIO (ND) 1.72000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 1.69000D+02

3 OMEGA MODE FREQUENCY (HERTZ) 6.13000D+00

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

4 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	1.0000D+00	0.0	0.0	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

4

96

1 ZETA DAMPING RATIO (ND) 7.65000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 3.70800D+00

3 OMEGA MODE FREQUENCY (HERTZ) 1.55300D+01

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

4 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

			U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1		1.0000D+00	0.0	2.0000D-01	0.0	1.5600D-03	0.0
16 - 21	NODE 2		0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3		0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4		0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5		0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

			THETA	PHI	XSI
40 - 42	NODE 1		0.0	0.0	0.0
43 - 45	NODE 2		0.0	0.0	0.0
46 - 48	NODE 3		0.0	0.0	0.0
49 - 51	NODE 4		0.0	0.0	0.0
52 - 54	NODE 5		0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0



COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 5

1 ZETA DAMPING RATIO (NO) 3.67000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 4.69100D+00

3 OMEGA MODE FREQUENCY (HERTZ) 1.71000D+01

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

4 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

	U	V	W	THETAX	THETAY	THETAZ
10 - 15 NODE 1	0.0	-1.0000D+00	0.0	1.5200D-03	0.0	0.0
16 - 21 NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27 NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33 NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39 NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

	THETA	PHI	XSI
40 - 42 NODE 1	0.0	0.0	0.0
43 - 45 NODE 2	0.0	0.0	0.0
46 - 48 NODE 3	0.0	0.0	0.0
49 - 51 NODE 4	0.0	0.0	0.0
52 - 54 NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

6

86

1 ZETA DAMPING RATIO (ND) 4.55000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 2.53400D+01

3 OMEGA MODE FREQUENCY (HERTZ) 1.95900D+01

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

4 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	3.1000D-01	0.0	1.0000D+00	0.0	-9.0300D-03	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:EIGEN2

\*\*\*\*\* COMPLEX EIGENSOLUTION \*\*\*\*\*

ELEMENT: 7

1 IDEBUG DEBUG SELECTOR

= 0 ==> NO DEBUG PRINTOUT

= 1 ==> TRACE MATRIX ASSEMBLY AND SOLUTION

0

COMPONENT:GENINPUT

\*\*\*\*\* GENERAL INPUT FOR PROGRAM CONTROL \*\*\*\*\*

ELEMENT: 8

1 ICHTL1 PRINT SELECTOR FOR FINAL RESULTS

= 0 ==> SUPPRESS LINE PRINTER OUTPUT

= 1 ==> FULL LINE PRINTER OUTPUT

0

2 ICHTL2 PRINT SELECTOR FOR COMPONENT INPUTS

= 0 ==> SUPPRESS LINE PRINTER OUTPUT

= 1 ==> FULL LINE PRINTER OUTPUT

1

3-9 ----- OPEN LOCATIONS FOR FUTURE USE

10 XINDEP INDEPENDENT VARIABLE FOR 3-D PLOTS

0.0

100

NUMBER	OUTPUT COORDINATES					VALUE		
100	1	ELEMENT		FREQ	EIGV	1	1.0249D+00	
	2	ELEMENT		DAMP	EIGV	1	4.4131D-01	
	3	ELEMENT	1	RE2	QFT1	REAL	1	1.0000D+00
	4	ELEMENT	1	RE2	QFT1	IMAG	1	0.0
	5	ELEMENT	1	RE2	QFT2	REAL	1	-4.1269D-01
	6	ELEMENT	1	RE2	QFT2	IMAG	1	-2.5038D-03
	7	ELEMENT	1	RE2	BETA	REAL	1	1.1382D-01
	8	ELEMENT	1	RE2	BETA	IMAG	1	-5.1199D-02
	9	ELEMENT	1	RE2	GAMA	REAL	1	-9.4922D-01
	10	ELEMENT	1	RE2	GAMA	IMAG	1	-1.5154D-01
	11	ELEMENT	1	RE2	QT1S	REAL	1	-4.8726D-04
	12	ELEMENT	1	RE2	QT1S	IMAG	1	-2.6827D-04
	13	ELEMENT	1	RE2	QT1C	REAL	1	1.8634D-04
	14	ELEMENT	1	RE2	QT1C	IMAG	1	-1.4924D-04
	15	ELEMENT	1	RE2	QT2S	REAL	1	2.4610D-04
	16	ELEMENT	1	RE2	QT2S	IMAG	1	9.4295D-05
	17	ELEMENT	1	RE2	QT2C	REAL	1	-2.0848D-05
	18	ELEMENT	1	RE2	QT2C	IMAG	1	1.1720D-05
	19	ELEMENT	1	RE2	BETS	REAL	1	-4.8672D-05
	20	ELEMENT	1	RE2	BETS	IMAG	1	-8.8094D-05
	21	ELEMENT	1	RE2	BETC	REAL	1	-4.6813D-06
	22	ELEMENT	1	RE2	BETC	IMAG	1	-7.0757D-05
	23	ELEMENT	1	RE2	GAMS	REAL	1	4.5676D-05
	24	ELEMENT	1	RE2	GAMS	IMAG	1	4.5992D-06
	25	ELEMENT	1	RE2	GAMC	REAL	1	-1.5660D-05
	26	ELEMENT	1	RE2	GAMC	IMAG	1	3.8861D-05
	27	ELEMENT	1	RE2	X	REAL	1	4.0603D-03
	28	ELEMENT	1	RE2	X	IMAG	1	-2.6911D-03
	29	ELEMENT	1	RE2	Y	REAL	1	1.2012D-07
	30	ELEMENT	1	RE2	Y	IMAG	1	1.6238D-06
	31	ELEMENT	1	RE2	Z	REAL	1	2.3376D-03
	32	ELEMENT	1	RE2	Z	IMAG	1	-1.5492D-03
	33	ELEMENT	1	RE2	THTX	REAL	1	-1.0487D-09
	34	ELEMENT	1	RE2	THTX	IMAG	1	-1.6587D-08
	35	ELEMENT	1	RE2	THTY	REAL	1	-1.0974D-04
	36	ELEMENT	1	RE2	THTY	IMAG	1	7.2618D-05
	37	ELEMENT	1	RE2	THTZ	REAL	1	0.0
	38	ELEMENT	1	RE2	THTZ	IMAG	1	0.0
	39	ELEMENT	2	MS1	MODE	REAL	1	-6.2627D-08
	40	ELEMENT	2	MS1	MODE	IMAG	1	-7.1447D-07
	41	ELEMENT	3	MS1	MODE	REAL	1	1.7651D-06
	42	ELEMENT	3	MS1	MODE	IMAG	1	1.2017D-06
	43	ELEMENT	4	MS1	MODE	REAL	1	3.5542D-03
	44	ELEMENT	4	MS1	MODE	IMAG	1	-2.3593D-03
	45	ELEMENT	5	MS1	MODE	REAL	1	-5.7497D-08
	46	ELEMENT	5	MS1	MODE	IMAG	1	-9.0936D-07
	47	ELEMENT	6	MS1	MODE	REAL	1	1.6267D-03
	48	ELEMENT	6	MS1	MODE	IMAG	1	-1.0776D-03
	49	ELEMENT		FREQ	EIGV	2	1.3124D+00	
	50	ELEMENT		DAMP	EIGV	2	8.9276D-01	
	51	ELEMENT	1	RE2	QFT1	REAL	2	1.0951D-03
	52	ELEMENT	1	RE2	QFT1	IMAG	2	-1.1053D-03
	53	ELEMENT	1	RE2	QFT2	REAL	2	-7.2266D-05
	54	ELEMENT	1	RE2	QFT2	IMAG	2	4.2346D-05
	55	ELEMENT	1	RE2	BETA	REAL	2	1.1124D-04

56	ELEMENT	1	RE2	BETA	IMAG	2	-1.0032D-05
57	ELEMENT	1	RE2	GAMA	REAL	2	-4.0569D-05
58	ELEMENT	1	RE2	GAMA	IMAG	2	-1.8870D-05
59	ELEMENT	1	RE2	QT1S	REAL	2	1.0000D+00
60	ELEMENT	1	RE2	QT1S	IMAG	2	0.0
61	ELEMENT	1	RE2	QT1C	REAL	2	1.5946D-04
62	ELEMENT	1	RE2	QT1C	IMAG	2	9.9871D-01
63	ELEMENT	1	RE2	QT2S	REAL	2	9.0573D-03
64	ELEMENT	1	RE2	QT2S	IMAG	2	2.5919D-02
65	ELEMENT	1	RE2	QT2C	REAL	2	-2.5822D-02
66	ELEMENT	1	RE2	QT2C	IMAG	2	8.9994D-03
67	ELEMENT	1	RE2	BETS	REAL	2	6.7474D-02
68	ELEMENT	1	RE2	BETS	IMAG	2	-5.4181D-02
69	ELEMENT	1	RE2	BETC	REAL	2	5.4235D-02
70	ELEMENT	1	RE2	BETC	IMAG	2	6.7406D-02
71	ELEMENT	1	RE2	GAMS	REAL	2	2.7653D-03
72	ELEMENT	1	RE2	GAMS	IMAG	2	1.9567D-02
73	ELEMENT	1	RE2	GAMC	REAL	2	-1.9573D-02
74	ELEMENT	1	RE2	GAMC	IMAG	2	2.7486D-03
75	ELEMENT	1	RE2	X	REAL	2	1.7389D-03
76	ELEMENT	1	RE2	X	IMAG	2	-1.2957D-03
77	ELEMENT	1	RE2	Y	REAL	2	-9.5937D-04
78	ELEMENT	1	RE2	Y	IMAG	2	-1.4475D-03
79	ELEMENT	1	RE2	Z	REAL	2	4.3873D-04
80	ELEMENT	1	RE2	Z	IMAG	2	-8.1374D-05
81	ELEMENT	1	RE2	THTX	REAL	2	1.4890D-05
82	ELEMENT	1	RE2	THTX	IMAG	2	1.7389D-05
83	ELEMENT	1	RE2	THTY	REAL	2	1.2103D-05
84	ELEMENT	1	RE2	THTY	IMAG	2	-4.2390D-05
85	ELEMENT	1	RE2	THTZ	REAL	2	0.0
86	ELEMENT	1	RE2	THTZ	IMAG	2	0.0
87	ELEMENT	2	MS1	MODE	REAL	2	1.4301D-04
88	ELEMENT	2	MS1	MODE	IMAG	2	4.9417D-04
89	ELEMENT	3	MS1	MODE	REAL	2	2.1777D-04
90	ELEMENT	3	MS1	MODE	IMAG	2	-8.1287D-05
91	ELEMENT	4	MS1	MODE	REAL	2	1.4766D-03
92	ELEMENT	4	MS1	MODE	IMAG	2	-1.2678D-03
93	ELEMENT	5	MS1	MODE	REAL	2	8.1636D-04
94	ELEMENT	5	MS1	MODE	IMAG	2	9.5334D-04
95	ELEMENT	6	MS1	MODE	REAL	2	1.4341D-04
96	ELEMENT	6	MS1	MODE	IMAG	2	1.7218D-04
97	ELEMENT			FREQ	EIGV	3	2.9813D+00
98	ELEMENT			DAMP	EIGV	3	6.5712D-01
99	ELEMENT	1	RE2	QFT1	REAL	3	1.0000D+00
100	ELEMENT	1	RE2	QFT1	IMAG	3	0.0
101	ELEMENT	1	RE2	QFT2	REAL	3	8.7756D-03
102	ELEMENT	1	RE2	QFT2	IMAG	3	-2.5016D-02
103	ELEMENT	1	RE2	BETA	REAL	3	6.7129D-02
104	ELEMENT	1	RE2	BETA	IMAG	3	5.4461D-02
105	ELEMENT	1	RE2	GAMA	REAL	3	2.9740D-03
106	ELEMENT	1	RE2	GAMA	IMAG	3	-1.9579D-02
107	ELEMENT	1	RE2	QT1S	REAL	3	-2.1971D-03
108	ELEMENT	1	RE2	QT1S	IMAG	3	-2.8141D-03
109	ELEMENT	1	RE2	QT1C	REAL	3	1.1036D-04
110	ELEMENT	1	RE2	QT1C	IMAG	3	-1.6523D-03
111	ELEMENT	1	RE2	QT2S	REAL	3	-1.2265D-03
112	ELEMENT	1	RE2	QT2S	IMAG	3	1.0375D-03
113	ELEMENT	1	RE2	QT2C	REAL	3	4.1029D-04
114	ELEMENT	1	RE2	QT2C	IMAG	3	1.1822D-04
115	ELEMENT	1	RE2	BETS	REAL	3	-1.0811D-04

102

116	ELEMENT	1	RE2	BETS	IMAG	3	8.39500-06
117	ELEMENT	1	RE2	BETC	REAL	3	-7.13520-05
118	ELEMENT	1	RE2	BETC	IMAG	3	-2.33790-04
119	ELEMENT	1	RE2	GAMS	REAL	3	-4.04690-06
120	ELEMENT	1	RE2	GAMS	IMAG	3	-3.76110-04
121	ELEMENT	1	RE2	GAMC	REAL	3	4.55520-04
122	ELEMENT	1	RE2	GAMC	IMAG	3	2.60650-06
123	ELEMENT	1	RE2	X	REAL	3	1.98850-03
124	ELEMENT	1	RE2	X	IMAG	3	2.30910-03
125	ELEMENT	1	RE2	Y	REAL	3	1.26000-06
126	ELEMENT	1	RE2	Y	IMAG	3	5.63340-05
127	ELEMENT	1	RE2	Z	REAL	3	1.20980-03
128	ELEMENT	1	RE2	Z	IMAG	3	1.26830-03
129	ELEMENT	1	RE2	THTX	REAL	3	-1.61860-07
130	ELEMENT	1	RE2	THTX	IMAG	3	-7.20280-07
131	ELEMENT	1	RE2	THTY	REAL	3	-6.05560-05
132	ELEMENT	1	RE2	THTY	IMAG	3	-5.52570-05
133	ELEMENT	1	RE2	THTZ	REAL	3	0.0
134	ELEMENT	1	RE2	THTZ	IMAG	3	0.0
135	ELEMENT	2	MS1	MODE	REAL	3	7.61400-06
136	ELEMENT	2	MS1	MODE	IMAG	3	-1.68450-05
137	ELEMENT	3	MS1	MODE	REAL	3	-2.45340-05
138	ELEMENT	3	MS1	MODE	IMAG	3	7.46410-06
139	ELEMENT	4	MS1	MODE	REAL	3	1.74620-03
140	ELEMENT	4	MS1	MODE	IMAG	3	2.03450-03
141	ELEMENT	5	MS1	MODE	REAL	3	-8.87400-06
142	ELEMENT	5	MS1	MODE	IMAG	3	-3.94890-05
143	ELEMENT	6	MS1	MODE	REAL	3	8.60520-04
144	ELEMENT	6	MS1	MODE	IMAG	3	8.61420-04
145	ELEMENT			FREQ	EIGV	4	3.34820+00
146	ELEMENT			DAMP	EIGV	4	1.66740-01
147	ELEMENT	1	RE2	QFT1	REAL	4	-1.23970-01
148	ELEMENT	1	RE2	QFT1	IMAG	4	2.02450-02
149	ELEMENT	1	RE2	QFT2	REAL	4	2.00930-03
150	ELEMENT	1	RE2	QFT2	IMAG	4	5.31380-03
151	ELEMENT	1	RE2	BETA	REAL	4	-3.50250-03
152	ELEMENT	1	RE2	BETA	IMAG	4	-5.34550-03
153	ELEMENT	1	RE2	GAMA	REAL	4	-1.44910-03
154	ELEMENT	1	RE2	GAMA	IMAG	4	3.08530-04
155	ELEMENT	1	RE2	QT1S	REAL	4	1.00000+00
156	ELEMENT	1	RE2	QT1S	IMAG	4	0.0
157	ELEMENT	1	RE2	QT1C	REAL	4	6.88810-03
158	ELEMENT	1	RE2	QT1C	IMAG	4	9.74080-01
159	ELEMENT	1	RE2	QT2S	REAL	4	-3.51150-01
160	ELEMENT	1	RE2	QT2S	IMAG	4	5.32060-02
161	ELEMENT	1	RE2	QT2C	REAL	4	-6.12230-02
162	ELEMENT	1	RE2	QT2C	IMAG	4	-3.52040-01
163	ELEMENT	1	RE2	BETS	REAL	4	1.23910-01
164	ELEMENT	1	RE2	BETS	IMAG	4	3.15280-02
165	ELEMENT	1	RE2	BETC	REAL	4	-3.07640-02
166	ELEMENT	1	RE2	BETC	IMAG	4	1.23920-01
167	ELEMENT	1	RE2	GAMS	REAL	4	-8.84750-01
168	ELEMENT	1	RE2	GAMS	IMAG	4	2.10230-01
169	ELEMENT	1	RE2	GAMC	REAL	4	-2.10550-01
170	ELEMENT	1	RE2	GAMC	IMAG	4	-8.84820-01
171	ELEMENT	1	RE2	X	REAL	4	1.13350-01
172	ELEMENT	1	RE2	X	IMAG	4	-1.71490-03
173	ELEMENT	1	RE2	Y	REAL	4	1.30830-02
174	ELEMENT	1	RE2	Y	IMAG	4	-1.16000-01
175	ELEMENT	1	RE2	Z	REAL	4	2.11600-02

176	ELEMENT	1	RE2	Z	IMAG	4	-8.0168D-04
177	ELEMENT	1	RE2	THTX	REAL	4	1.3960D-05
178	ELEMENT	1	RE2	THTX	IMAG	4	1.1175D-03
179	ELEMENT	1	RE2	THTY	REAL	4	1.5468D-03
180	ELEMENT	1	RE2	THTY	IMAG	4	-5.2157D-05
181	ELEMENT	1	RE2	THTZ	REAL	4	0.0
182	ELEMENT	1	RE2	THTZ	IMAG	4	0.0
183	ELEMENT	2	MS1	MODE	REAL	4	-1.3849D-02
184	ELEMENT	2	MS1	MODE	IMAG	4	5.4731D-02
185	ELEMENT	3	MS1	MODE	REAL	4	1.7621D-02
186	ELEMENT	3	MS1	MODE	IMAG	4	1.7622D-03
187	ELEMENT	4	MS1	MODE	REAL	4	9.5059D-02
188	ELEMENT	4	MS1	MODE	IMAG	4	-3.4420D-03
189	ELEMENT	5	MS1	MODE	REAL	4	7.6533D-04
190	ELEMENT	5	MS1	MODE	IMAG	4	6.1268D-02
191	ELEMENT	6	MS1	MODE	REAL	4	2.1478D-03
192	ELEMENT	6	MS1	MODE	IMAG	4	-1.1329D-04
193	ELEMENT			FREQ	EIGV	5	4.4811D+00
194	ELEMENT			DAMP	EIGV	5	2.8156D-02
195	ELEMENT	1	RE2	QFT1	REAL	5	3.0662D-01
196	ELEMENT	1	RE2	QFT1	IMAG	5	1.3671D-01
197	ELEMENT	1	RE2	QFT2	REAL	5	2.2802D-03
198	ELEMENT	1	RE2	QFT2	IMAG	5	-1.6064D-02
199	ELEMENT	1	RE2	BETA	REAL	5	2.0227D-04
200	ELEMENT	1	RE2	BETA	IMAG	5	1.0583D-02
201	ELEMENT	1	RE2	GAMA	REAL	5	1.4490D-03
202	ELEMENT	1	RE2	GAMA	IMAG	5	5.8349D-04
203	ELEMENT	1	RE2	QT1S	REAL	5	-4.7116D-01
204	ELEMENT	1	RE2	QT1S	IMAG	5	-6.6245D-01
205	ELEMENT	1	RE2	QT1C	REAL	5	1.0000D+00
206	ELEMENT	1	RE2	QT1C	IMAG	5	0.0
207	ELEMENT	1	RE2	QT2S	REAL	5	1.5062D-01
208	ELEMENT	1	RE2	QT2S	IMAG	5	1.9281D-01
209	ELEMENT	1	RE2	QT2C	REAL	5	1.2101D-01
210	ELEMENT	1	RE2	QT2C	IMAG	5	-1.2298D-02
211	ELEMENT	1	RE2	BETS	REAL	5	-7.4858D-02
212	ELEMENT	1	RE2	BETS	IMAG	5	-6.7096D-02
213	ELEMENT	1	RE2	BETC	REAL	5	6.6767D-02
214	ELEMENT	1	RE2	BETC	IMAG	5	-7.1489D-02
215	ELEMENT	1	RE2	GAMS	REAL	5	4.2024D-01
216	ELEMENT	1	RE2	GAMS	IMAG	5	7.3672D-01
217	ELEMENT	1	RE2	GAMC	REAL	5	-7.2589D-01
218	ELEMENT	1	RE2	GAMC	IMAG	5	4.1564D-01
219	ELEMENT	1	RE2	X	REAL	5	-1.2120D-01
220	ELEMENT	1	RE2	X	IMAG	5	-1.7145D-01
221	ELEMENT	1	RE2	Y	REAL	5	-5.2283D-01
222	ELEMENT	1	RE2	Y	IMAG	5	2.7924D-01
223	ELEMENT	1	RE2	Z	REAL	5	-2.1696D-02
224	ELEMENT	1	RE2	Z	IMAG	5	-2.9557D-02
225	ELEMENT	1	RE2	THTX	REAL	5	1.8263D-03
226	ELEMENT	1	RE2	THTX	IMAG	5	-1.1809D-03
227	ELEMENT	1	RE2	THTY	REAL	5	-1.5233D-03
228	ELEMENT	1	RE2	THTY	IMAG	5	-2.1530D-03
229	ELEMENT	1	RE2	THTZ	REAL	5	0.0
230	ELEMENT	1	RE2	THTZ	IMAG	5	0.0
231	ELEMENT	2	MS1	MODE	REAL	5	4.2271D-01
232	ELEMENT	2	MS1	MODE	IMAG	5	-2.1450D-01
233	ELEMENT	3	MS1	MODE	REAL	5	-2.4506D-02
234	ELEMENT	3	MS1	MODE	IMAG	5	-3.7907D-02
235	ELEMENT	4	MS1	MODE	REAL	5	-9.5918D-02

104

236	ELEMENT	4	MS1	MODE	IMAG	5	-1.3260D-01
237	ELEMENT	5	MS1	MODE	REAL	5	1.0012D-01
238	ELEMENT	5	MS1	MODE	IMAG	5	-6.4742D-02
239	ELEMENT	6	MS1	MODE	REAL	5	-2.5128D-03
240	ELEMENT	6	MS1	MODE	IMAG	5	-3.0381D-03
241	ELEMENT			FREQ	EIGV	6	5.1759D+00
242	ELEMENT			DAMP	EIGV	6	6.0233D-02
243	ELEMENT	1	RE2	QFT1	REAL	6	-3.6576D-01
244	ELEMENT	1	RE2	QFT1	IMAG	6	3.9944D-01
245	ELEMENT	1	RE2	QFT2	REAL	6	2.4986D-02
246	ELEMENT	1	RE2	QFT2	IMAG	6	1.2054D-02
247	ELEMENT	1	RE2	BETA	REAL	6	-1.3417D-02
248	ELEMENT	1	RE2	BETA	IMAG	6	-1.9632D-03
249	ELEMENT	1	RE2	GAMA	REAL	6	-7.2498D-04
250	ELEMENT	1	RE2	GAMA	IMAG	6	1.5398D-03
251	ELEMENT	1	RE2	QT1S	REAL	6	1.0000D+00
252	ELEMENT	1	RE2	QT1S	IMAG	6	0.0
253	ELEMENT	1	RE2	QT1C	REAL	6	6.1445D-01
254	ELEMENT	1	RE2	QT1C	IMAG	6	3.6538D-01
255	ELEMENT	1	RE2	QT2S	REAL	6	3.4426D-02
256	ELEMENT	1	RE2	QT2S	IMAG	6	3.8532D-02
257	ELEMENT	1	RE2	QT2C	REAL	6	-3.1595D-01
258	ELEMENT	1	RE2	QT2C	IMAG	6	-4.2383D-01
259	ELEMENT	1	RE2	BETS	REAL	6	6.7054D-02
260	ELEMENT	1	RE2	BETS	IMAG	6	-7.0727D-02
261	ELEMENT	1	RE2	BETC	REAL	6	7.7311D-02
262	ELEMENT	1	RE2	BETC	IMAG	6	6.5570D-02
263	ELEMENT	1	RE2	GAMS	REAL	6	-6.8982D-01
264	ELEMENT	1	RE2	GAMS	IMAG	6	2.0753D-01
265	ELEMENT	1	RE2	GAMC	REAL	6	-2.1469D-01
266	ELEMENT	1	RE2	GAMC	IMAG	6	-7.0287D-01
267	ELEMENT	1	RE2	X	REAL	6	2.7540D-01
268	ELEMENT	1	RE2	X	IMAG	6	-6.9790D-02
269	ELEMENT	1	RE2	Y	REAL	6	1.4800D-01
270	ELEMENT	1	RE2	Y	IMAG	6	8.1339D-02
271	ELEMENT	1	RE2	Z	REAL	6	4.2872D-02
272	ELEMENT	1	RE2	Z	IMAG	6	-1.4415D-02
273	ELEMENT	1	RE2	THTX	REAL	6	4.8409D-04
274	ELEMENT	1	RE2	THTX	IMAG	6	1.8746D-03
275	ELEMENT	1	RE2	THTY	REAL	6	2.9999D-03
276	ELEMENT	1	RE2	THTY	IMAG	6	-9.5244D-04
277	ELEMENT	1	RE2	THTZ	REAL	6	0.0
278	ELEMENT	1	RE2	THTZ	IMAG	6	0.0
279	ELEMENT	2	MS1	MODE	REAL	6	-1.7454D-01
280	ELEMENT	2	MS1	MODE	IMAG	6	-1.8411D-01
281	ELEMENT	3	MS1	MODE	REAL	6	8.4564D-02
282	ELEMENT	3	MS1	MODE	IMAG	6	-6.9311D-03
283	ELEMENT	4	MS1	MODE	REAL	6	1.8928D-01
284	ELEMENT	4	MS1	MODE	IMAG	6	-6.2250D-02
285	ELEMENT	5	MS1	MODE	REAL	6	2.6540D-02
286	ELEMENT	5	MS1	MODE	IMAG	6	1.0277D-01
287	ELEMENT	6	MS1	MODE	REAL	6	5.0155D-03
288	ELEMENT	6	MS1	MODE	IMAG	6	-1.9646D-03
289	ELEMENT			FREQ	EIGV	7	6.1722D+00
290	ELEMENT			DAMP	EIGV	7	2.3605D-02
291	ELEMENT	1	RE2	QFT1	REAL	7	1.6817D-01
292	ELEMENT	1	RE2	QFT1	IMAG	7	3.0148D-01
293	ELEMENT	1	RE2	QFT2	REAL	7	1.2487D-02
294	ELEMENT	1	RE2	QFT2	IMAG	7	-1.3787D-02
295	ELEMENT	1	RE2	BETA	REAL	7	-2.4954D-03



296	ELEMENT	1	RE2	BETA	IMAG	7	5.3036D-03
297	ELEMENT	1	RE2	GAMA	REAL	7	4.5063D-04
298	ELEMENT	1	RE2	GAMA	IMAG	7	3.8557D-04
299	ELEMENT	1	RE2	QT1S	REAL	7	-6.8468D-01
300	ELEMENT	1	RE2	QT1S	IMAG	7	2.6532D-01
301	ELEMENT	1	RE2	QT1C	REAL	7	1.0000D+00
302	ELEMENT	1	RE2	QT1C	IMAG	7	0.0
303	ELEMENT	1	RE2	QT2S	REAL	7	5.9053D-01
304	ELEMENT	1	RE2	QT2S	IMAG	7	7.5994D-01
305	ELEMENT	1	RE2	QT2C	REAL	7	-4.1830D-02
306	ELEMENT	1	RE2	QT2C	IMAG	7	-1.0062D-01
307	ELEMENT	1	RE2	BETS	REAL	7	-4.5155D-02
308	ELEMENT	1	RE2	BETS	IMAG	7	-2.8329D-02
309	ELEMENT	1	RE2	BETC	REAL	7	3.1267D-02
310	ELEMENT	1	RE2	BETC	IMAG	7	-3.9717D-02
311	ELEMENT	1	RE2	GAMS	REAL	7	4.3840D-02
312	ELEMENT	1	RE2	GAMS	IMAG	7	3.9807D-01
313	ELEMENT	1	RE2	GAMC	REAL	7	-3.8170D-01
314	ELEMENT	1	RE2	GAMC	IMAG	7	3.0564D-02
315	ELEMENT	1	RE2	X	REAL	7	3.2015D-01
316	ELEMENT	1	RE2	X	IMAG	7	3.7569D-01
317	ELEMENT	1	RE2	Y	REAL	7	-2.8384D-02
318	ELEMENT	1	RE2	Y	IMAG	7	3.6161D-03
319	ELEMENT	1	RE2	Z	REAL	7	2.0899D-03
320	ELEMENT	1	RE2	Z	IMAG	7	-2.0547D-02
321	ELEMENT	1	RE2	THTX	REAL	7	1.5974D-03
322	ELEMENT	1	RE2	THTX	IMAG	7	-2.7681D-04
323	ELEMENT	1	RE2	THTY	REAL	7	1.7226D-04
324	ELEMENT	1	RE2	THTY	IMAG	7	-1.4550D-03
325	ELEMENT	1	RE2	THTZ	REAL	7	0.0
326	ELEMENT	1	RE2	THTZ	IMAG	7	0.0
327	ELEMENT	2	MS1	MODE	REAL	7	-5.9194D-02
328	ELEMENT	2	MS1	MODE	IMAG	7	1.1560D-02
329	ELEMENT	3	MS1	MODE	REAL	7	3.1024D-01
330	ELEMENT	3	MS1	MODE	IMAG	7	4.6756D-01
331	ELEMENT	4	MS1	MODE	REAL	7	9.8713D-03
332	ELEMENT	4	MS1	MODE	IMAG	7	-9.1146D-02
333	ELEMENT	5	MS1	MODE	REAL	7	8.7578D-02
334	ELEMENT	5	MS1	MODE	IMAG	7	-1.5176D-02
335	ELEMENT	6	MS1	MODE	REAL	7	1.1567D-04
336	ELEMENT	6	MS1	MODE	IMAG	7	-2.3182D-03
337	ELEMENT			FREQ	EIGV	8	7.2977D+00
338	ELEMENT			DAMP	EIGV	8	3.3554D-01
339	ELEMENT	1	RE2	QFT1	REAL	8	3.5675D-02
340	ELEMENT	1	RE2	QFT1	IMAG	8	-2.1267D-02
341	ELEMENT	1	RE2	QFT2	REAL	8	-1.7632D-03
342	ELEMENT	1	RE2	QFT2	IMAG	8	-1.3939D-03
343	ELEMENT	1	RE2	BETA	REAL	8	3.6116D-04
344	ELEMENT	1	RE2	BETA	IMAG	8	-3.1185D-04
345	ELEMENT	1	RE2	GAMA	REAL	8	-3.0457D-05
346	ELEMENT	1	RE2	GAMA	IMAG	8	-2.6636D-05
347	ELEMENT	1	RE2	QT1S	REAL	8	1.0000D+00
348	ELEMENT	1	RE2	QT1S	IMAG	8	0.0
349	ELEMENT	1	RE2	QT1C	REAL	8	-1.8039D-02
350	ELEMENT	1	RE2	QT1C	IMAG	8	9.6376D-01
351	ELEMENT	1	RE2	QT2S	REAL	8	-5.2177D-03
352	ELEMENT	1	RE2	QT2S	IMAG	8	-2.5424D-02
353	ELEMENT	1	RE2	QT2C	REAL	8	2.3274D-02
354	ELEMENT	1	RE2	QT2C	IMAG	8	4.0853D-03
355	ELEMENT	1	RE2	BETS	REAL	8	6.5041D-02

356	ELEMENT	1	RE2	BETS	IMAG	8	5.3736D-02
357	ELEMENT	1	RE2	BETC	REAL	8	-5.3785D-02
358	ELEMENT	1	RE2	BETC	IMAG	8	6.5067D-02
359	ELEMENT	1	RE2	GAMS	REAL	8	2.1778D-03
360	ELEMENT	1	RE2	GAMS	IMAG	8	-1.6624D-02
361	ELEMENT	1	RE2	GAMC	REAL	8	1.6700D-02
362	ELEMENT	1	RE2	GAMC	IMAG	8	2.3077D-03
363	ELEMENT	1	RE2	X	REAL	8	-4.8780D-03
364	ELEMENT	1	RE2	X	IMAG	8	3.8898D-03
365	ELEMENT	1	RE2	Y	REAL	8	1.8884D-03
366	ELEMENT	1	RE2	Y	IMAG	8	2.6635D-03
367	ELEMENT	1	RE2	Z	REAL	8	-1.1143D-03
368	ELEMENT	1	RE2	Z	IMAG	8	1.1498D-03
369	ELEMENT	1	RE2	THTX	REAL	8	-4.8961D-05
370	ELEMENT	1	RE2	THTX	IMAG	8	-4.2640D-05
371	ELEMENT	1	RE2	THTY	REAL	8	-5.5496D-05
372	ELEMENT	1	RE2	THTY	IMAG	8	5.2550D-05
373	ELEMENT	1	RE2	THTZ	REAL	8	0.0
374	ELEMENT	1	RE2	THTZ	IMAG	8	0.0
375	ELEMENT	2	MS1	MODE	REAL	8	7.9591D-04
376	ELEMENT	2	MS1	MODE	IMAG	8	-3.2576D-04
377	ELEMENT	3	MS1	MODE	REAL	8	-4.3991D-04
378	ELEMENT	3	MS1	MODE	IMAG	8	-5.8017D-04
379	ELEMENT	4	MS1	MODE	REAL	8	-4.3632D-03
380	ELEMENT	4	MS1	MODE	IMAG	8	4.3855D-03
381	ELEMENT	5	MS1	MODE	REAL	8	-2.6843D-03
382	ELEMENT	5	MS1	MODE	IMAG	8	-2.3377D-03
383	ELEMENT	6	MS1	MODE	REAL	8	-2.4163D-04
384	ELEMENT	6	MS1	MODE	IMAG	8	2.7267D-04
385	ELEMENT			FREQ	EIGV	9	7.5502D+00
386	ELEMENT			DAMP	EIGV	9	2.8234D-01
387	ELEMENT	1	RE2	QFT1	REAL	9	6.8603D-04
388	ELEMENT	1	RE2	QFT1	IMAG	9	1.3152D-03
389	ELEMENT	1	RE2	QFT2	REAL	9	5.4597D-05
390	ELEMENT	1	RE2	QFT2	IMAG	9	-5.7700D-05
391	ELEMENT	1	RE2	BETA	REAL	9	6.8864D-06
392	ELEMENT	1	RE2	BETA	IMAG	9	1.3275D-05
393	ELEMENT	1	RE2	GAMA	REAL	9	1.0523D-06
394	ELEMENT	1	RE2	GAMA	IMAG	9	-6.5687D-07
395	ELEMENT	1	RE2	QT1S	REAL	9	1.0000D+00
396	ELEMENT	1	RE2	QT1S	IMAG	9	0.0
397	ELEMENT	1	RE2	QT1C	REAL	9	1.0282D-03
398	ELEMENT	1	RE2	QT1C	IMAG	9	-9.9950D-01
399	ELEMENT	1	RE2	QT2S	REAL	9	1.5264D-02
400	ELEMENT	1	RE2	QT2S	IMAG	9	-4.8217D-02
401	ELEMENT	1	RE2	QT2C	REAL	9	-4.8165D-02
402	ELEMENT	1	RE2	QT2C	IMAG	9	-1.5389D-02
403	ELEMENT	1	RE2	BETS	REAL	9	-5.3058D-05
404	ELEMENT	1	RE2	BETS	IMAG	9	1.5325D-04
405	ELEMENT	1	RE2	BETC	REAL	9	1.9944D-04
406	ELEMENT	1	RE2	BETC	IMAG	9	1.6326D-04
407	ELEMENT	1	RE2	GAMS	REAL	9	-7.0020D-06
408	ELEMENT	1	RE2	GAMS	IMAG	9	-1.4532D-05
409	ELEMENT	1	RE2	GAMC	REAL	9	-1.4552D-05
410	ELEMENT	1	RE2	GAMC	IMAG	9	-2.8868D-05
411	ELEMENT	1	RE2	X	REAL	9	-1.0425D-04
412	ELEMENT	1	RE2	X	IMAG	9	4.0712D-05
413	ELEMENT	1	RE2	Y	REAL	9	-2.9115D-05
414	ELEMENT	1	RE2	Y	IMAG	9	-5.8494D-05
415	ELEMENT	1	RE2	Z	REAL	9	-2.8917D-05

416	ELEMENT	1	RE2	Z	IMAG	9	-4.2450D-05
417	ELEMENT	1	RE2	THTX	REAL	9	7.0216D-07
418	ELEMENT	1	RE2	THTX	IMAG	9	1.3510D-06
419	ELEMENT	1	RE2	THTY	REAL	9	-1.3833D-06
420	ELEMENT	1	RE2	THTY	IMAG	9	7.3823D-06
421	ELEMENT	1	RE2	THTZ	REAL	9	0.0
422	ELEMENT	1	RE2	THTZ	IMAG	9	0.0
423	ELEMENT	2	MS1	MODE	REAL	9	-9.3806D-06
424	ELEMENT	2	MS1	MODE	IMAG	9	-1.5574D-05
425	ELEMENT	3	MS1	MODE	REAL	9	9.6072D-06
426	ELEMENT	3	MS1	MODE	IMAG	9	-1.0744D-05
427	ELEMENT	4	MS1	MODE	REAL	9	-1.1182D-04
428	ELEMENT	4	MS1	MODE	IMAG	9	6.8886D-05
429	ELEMENT	5	MS1	MODE	REAL	9	3.8496D-05
430	ELEMENT	5	MS1	MODE	IMAG	9	7.4067D-05
431	ELEMENT	6	MS1	MODE	REAL	9	-6.5524D-06
432	ELEMENT	6	MS1	MODE	IMAG	9	-5.6227D-05
433	ELEMENT			FREQ	EIGV	10	1.1803D+01
434	ELEMENT			DAMP	EIGV	10	1.8116D-01
435	ELEMENT	1	RE2	QFT1	REAL	10	1.0000D+00
436	ELEMENT	1	RE2	QFT1	IMAG	10	0.0
437	ELEMENT	1	RE2	QFT2	REAL	10	1.4892D-02
438	ELEMENT	1	RE2	QFT2	IMAG	10	-4.8764D-02
439	ELEMENT	1	RE2	BETA	REAL	10	-4.6437D-05
440	ELEMENT	1	RE2	BETA	IMAG	10	2.3053D-04
441	ELEMENT	1	RE2	GAMA	REAL	10	1.8028D-05
442	ELEMENT	1	RE2	GAMA	IMAG	10	-1.8917D-05
443	ELEMENT	1	RE2	QT1S	REAL	10	5.1257D-04
444	ELEMENT	1	RE2	QT1S	IMAG	10	1.3318D-03
445	ELEMENT	1	RE2	QT1C	REAL	10	-2.2536D-03
446	ELEMENT	1	RE2	QT1C	IMAG	10	1.0132D-03
447	ELEMENT	1	RE2	QT2S	REAL	10	8.2802D-05
448	ELEMENT	1	RE2	QT2S	IMAG	10	-7.9427D-03
449	ELEMENT	1	RE2	QT2C	REAL	10	-4.0854D-03
450	ELEMENT	1	RE2	QT2C	IMAG	10	-1.0690D-03
451	ELEMENT	1	RE2	BETS	REAL	10	5.3976D-06
452	ELEMENT	1	RE2	BETS	IMAG	10	-3.8843D-06
453	ELEMENT	1	RE2	BETC	REAL	10	1.6566D-05
454	ELEMENT	1	RE2	BETC	IMAG	10	-2.4153D-05
455	ELEMENT	1	RE2	GAMS	REAL	10	-7.4601D-05
456	ELEMENT	1	RE2	GAMS	IMAG	10	-1.0026D-04
457	ELEMENT	1	RE2	GAMC	REAL	10	4.7382D-05
458	ELEMENT	1	RE2	GAMC	IMAG	10	-5.1987D-05
459	ELEMENT	1	RE2	X	REAL	10	-4.3134D-04
460	ELEMENT	1	RE2	X	IMAG	10	-6.6874D-04
461	ELEMENT	1	RE2	Y	REAL	10	1.4219D-04
462	ELEMENT	1	RE2	Y	IMAG	10	2.2038D-05
463	ELEMENT	1	RE2	Z	REAL	10	-2.2497D-04
464	ELEMENT	1	RE2	Z	IMAG	10	-1.8421D-04
465	ELEMENT	1	RE2	THTX	REAL	10	-2.7197D-06
466	ELEMENT	1	RE2	THTX	IMAG	10	-3.2689D-07
467	ELEMENT	1	RE2	THTY	REAL	10	8.5797D-06
468	ELEMENT	1	RE2	THTY	IMAG	10	-6.7498D-06
469	ELEMENT	1	RE2	THTZ	REAL	10	0.0
470	ELEMENT	1	RE2	THTZ	IMAG	10	0.0
471	ELEMENT	2	MS1	MODE	REAL	10	6.9167D-06
472	ELEMENT	2	MS1	MODE	IMAG	10	-4.1159D-06
473	ELEMENT	3	MS1	MODE	REAL	10	5.2695D-06
474	ELEMENT	3	MS1	MODE	IMAG	10	8.6620D-06
475	ELEMENT	4	MS1	MODE	REAL	10	-3.9112D-04

108	476	ELEMENT	4	MS1	MODE	IMAG	10	-6.61300-04
	477	ELEMENT	5	MS1	MODE	REAL	10	-1.49110-04
	478	ELEMENT	5	MS1	MODE	IMAG	10	-1.79220-05
	479	ELEMENT	6	MS1	MODE	REAL	10	-1.46750-04
	480	ELEMENT	6	MS1	MODE	IMAG	10	-5.19540-05
	481	ELEMENT			FREQ	EIGV	11	1.27010+01
	482	ELEMENT			DAMP	EIGV	11	6.22100-02
	483	ELEMENT	1	RE2	QFT1	REAL	11	1.00000+00
	484	ELEMENT	1	RE2	QFT1	IMAG	11	0.0
	485	ELEMENT	1	RE2	QFT2	REAL	11	2.19070-02
	486	ELEMENT	1	RE2	QFT2	IMAG	11	-7.33770-02
	487	ELEMENT	1	RE2	BETA	REAL	11	-1.07540-03
	488	ELEMENT	1	RE2	BETA	IMAG	11	1.43960-03
	489	ELEMENT	1	RE2	GAMA	REAL	11	6.87210-05
	490	ELEMENT	1	RE2	GAMA	IMAG	11	3.55770-05
	491	ELEMENT	1	RE2	QT1S	REAL	11	9.64650-03
	492	ELEMENT	1	RE2	QT1S	IMAG	11	8.31410-02
	493	ELEMENT	1	RE2	QT1C	REAL	11	-5.53390-02
	494	ELEMENT	1	RE2	QT1C	IMAG	11	-5.97490-02
	495	ELEMENT	1	RE2	QT2S	REAL	11	2.88230-01
	496	ELEMENT	1	RE2	QT2S	IMAG	11	-3.60540-01
	497	ELEMENT	1	RE2	QT2C	REAL	11	-2.47070-01
	498	ELEMENT	1	RE2	QT2C	IMAG	11	-2.03820-01
	499	ELEMENT	1	RE2	BETS	REAL	11	3.71770-04
	500	ELEMENT	1	RE2	BETS	IMAG	11	3.56630-04
	501	ELEMENT	1	RE2	BETC	REAL	11	6.88080-04
	502	ELEMENT	1	RE2	BETC	IMAG	11	-1.14150-03
	503	ELEMENT	1	RE2	GAMS	REAL	11	2.32050-03
	504	ELEMENT	1	RE2	GAMS	IMAG	11	-3.30990-03
	505	ELEMENT	1	RE2	GAMC	REAL	11	1.24370-03
	506	ELEMENT	1	RE2	GAMC	IMAG	11	7.78360-04
	507	ELEMENT	1	RE2	X	REAL	11	1.66380-02
	508	ELEMENT	1	RE2	X	IMAG	11	-2.46100-02
	509	ELEMENT	1	RE2	Y	REAL	11	6.14170-03
	510	ELEMENT	1	RE2	Y	IMAG	11	7.45170-03
	511	ELEMENT	1	RE2	Z	REAL	11	3.56940-03
	512	ELEMENT	1	RE2	Z	IMAG	11	-5.46590-03
	513	ELEMENT	1	RE2	THTX	REAL	11	-1.17390-04
	514	ELEMENT	1	RE2	THTX	IMAG	11	-1.40490-04
	515	ELEMENT	1	RE2	THTY	REAL	11	2.92230-04
	516	ELEMENT	1	RE2	THTY	IMAG	11	-4.09450-04
	517	ELEMENT	1	RE2	THTZ	REAL	11	0.0
	518	ELEMENT	1	RE2	THTZ	IMAG	11	0.0
	519	ELEMENT	2	MS1	MODE	REAL	11	2.94190-04
	520	ELEMENT	2	MS1	MODE	IMAG	11	2.50390-04
	521	ELEMENT	3	MS1	MODE	REAL	11	-2.36200-04
	522	ELEMENT	3	MS1	MODE	IMAG	11	3.47120-04
	523	ELEMENT	4	MS1	MODE	REAL	11	1.68100-02
	524	ELEMENT	4	MS1	MODE	IMAG	11	-2.48000-02
	525	ELEMENT	5	MS1	MODE	REAL	11	-6.43590-03
	526	ELEMENT	5	MS1	MODE	IMAG	11	-7.70210-03
	527	ELEMENT	6	MS1	MODE	REAL	11	2.07290-04
	528	ELEMENT	6	MS1	MODE	IMAG	11	-5.05850-04
	529	ELEMENT			FREQ	EIGV	12	1.48100+01
	530	ELEMENT			DAMP	EIGV	12	4.49150-02
	531	ELEMENT	1	RE2	QFT1	REAL	12	2.94310-01
	532	ELEMENT	1	RE2	QFT1	IMAG	12	-2.38430-01
	533	ELEMENT	1	RE2	QFT2	REAL	12	-5.39090-03
	534	ELEMENT	1	RE2	QFT2	IMAG	12	-4.68680-02
	535	ELEMENT	1	RE2	BETA	REAL	12	-4.47550-04

536	ELEMENT	1	RE2	BETA	IMAG	12	9.1262D-04
537	ELEMENT	1	RE2	GAMA	REAL	12	3.1502D-05
538	ELEMENT	1	RE2	GAMA	IMAG	12	1.4475D-05
539	ELEMENT	1	RE2	QT1S	REAL	12	-3.4647D-02
540	ELEMENT	1	RE2	QT1S	IMAG	12	4.0536D-01
541	ELEMENT	1	RE2	QT1C	REAL	12	-4.6601D-01
542	ELEMENT	1	RE2	QT1C	IMAG	12	1.8823D-01
543	ELEMENT	1	RE2	QT2S	REAL	12	2.5103D-01
544	ELEMENT	1	RE2	QT2S	IMAG	12	4.5448D-01
545	ELEMENT	1	RE2	QT2C	REAL	12	1.0000D+00
546	ELEMENT	1	RE2	QT2C	IMAG	12	0.0
547	ELEMENT	1	RE2	BETS	REAL	12	-1.6889D-03
548	ELEMENT	1	RE2	BETS	IMAG	12	-1.9291D-04
549	ELEMENT	1	RE2	BETC	REAL	12	4.2302D-04
550	ELEMENT	1	RE2	BETC	IMAG	12	-8.8155D-04
551	ELEMENT	1	RE2	GAMS	REAL	12	2.6011D-03
552	ELEMENT	1	RE2	GAMS	IMAG	12	-5.3039D-03
553	ELEMENT	1	RE2	GAMC	REAL	12	6.4872D-03
554	ELEMENT	1	RE2	GAMC	IMAG	12	2.5857D-03
555	ELEMENT	1	RE2	X	REAL	12	7.2247D-03
556	ELEMENT	1	RE2	X	IMAG	12	-1.8145D-02
557	ELEMENT	1	RE2	Y	REAL	12	-3.5612D-02
558	ELEMENT	1	RE2	Y	IMAG	12	-7.7079D-03
559	ELEMENT	1	RE2	Z	REAL	12	1.6902D-03
560	ELEMENT	1	RE2	Z	IMAG	12	-3.6384D-03
561	ELEMENT	1	RE2	THTX	REAL	12	6.5955D-04
562	ELEMENT	1	RE2	THTX	IMAG	12	1.4164D-04
563	ELEMENT	1	RE2	THTY	REAL	12	1.0768D-04
564	ELEMENT	1	RE2	THTY	IMAG	12	-3.3992D-04
565	ELEMENT	1	RE2	THTZ	REAL	12	0.0
566	ELEMENT	1	RE2	THTZ	IMAG	12	0.0
567	ELEMENT	2	MS1	MODE	REAL	12	-5.4782D-04
568	ELEMENT	2	MS1	MODE	IMAG	12	-5.7396D-05
569	ELEMENT	3	MS1	MODE	REAL	12	-5.2956D-05
570	ELEMENT	3	MS1	MODE	IMAG	12	3.2130D-05
571	ELEMENT	4	MS1	MODE	REAL	12	7.2001D-03
572	ELEMENT	4	MS1	MODE	IMAG	12	-1.8176D-02
573	ELEMENT	5	MS1	MODE	REAL	12	3.6160D-02
574	ELEMENT	5	MS1	MODE	IMAG	12	7.7653D-03
575	ELEMENT	6	MS1	MODE	REAL	12	2.5015D-04
576	ELEMENT	6	MS1	MODE	IMAG	12	-3.1302D-06
577	ELEMENT			FREQ	EIGV	13	1.6181D+01
578	ELEMENT			DAMP	EIGV	13	1.3683D-01
579	ELEMENT	1	RE2	QFT1	REAL	13	1.1996D-02
580	ELEMENT	1	RE2	QFT1	IMAG	13	1.0588D-02
581	ELEMENT	1	RE2	QFT2	REAL	13	2.2476D-03
582	ELEMENT	1	RE2	QFT2	IMAG	13	1.0615D-03
583	ELEMENT	1	RE2	BETA	REAL	13	-4.0109D-05
584	ELEMENT	1	RE2	BETA	IMAG	13	-2.7377D-05
585	ELEMENT	1	RE2	GAMA	REAL	13	-7.3971D-07
586	ELEMENT	1	RE2	GAMA	IMAG	13	1.2207D-06
587	ELEMENT	1	RE2	QT1S	REAL	13	1.0000D+00
588	ELEMENT	1	RE2	QT1S	IMAG	13	0.0
589	ELEMENT	1	RE2	QT1C	REAL	13	-1.7328D-03
590	ELEMENT	1	RE2	QT1C	IMAG	13	9.9569D-01
591	ELEMENT	1	RE2	QT2S	REAL	13	1.6855D-02
592	ELEMENT	1	RE2	QT2S	IMAG	13	-5.2916D-02
593	ELEMENT	1	RE2	QT2C	REAL	13	3.9212D-02
594	ELEMENT	1	RE2	QT2C	IMAG	13	4.3478D-02
595	ELEMENT	1	RE2	BETS	REAL	13	-1.2585D-04

110	596	ELEMENT	1	RE2	BETS	IMAG	13	1.3860D-04
	597	ELEMENT	1	RE2	BETC	REAL	13	-1.3046D-04
	598	ELEMENT	1	RE2	BETC	IMAG	13	-1.2905D-04
	599	ELEMENT	1	RE2	GAMS	REAL	13	2.3634D-04
	600	ELEMENT	1	RE2	GAMS	IMAG	13	-4.6696D-05
	601	ELEMENT	1	RE2	GAMC	REAL	13	8.1719D-05
	602	ELEMENT	1	RE2	GAMC	IMAG	13	2.3306D-04
	603	ELEMENT	1	RE2	X	REAL	13	1.0126D-03
	604	ELEMENT	1	RE2	X	IMAG	13	-4.7264D-05
	605	ELEMENT	1	RE2	Y	REAL	13	-5.2833D-04
	606	ELEMENT	1	RE2	Y	IMAG	13	-9.9720D-04
	607	ELEMENT	1	RE2	Z	REAL	13	1.6249D-04
	608	ELEMENT	1	RE2	Z	IMAG	13	1.1305D-04
	609	ELEMENT	1	RE2	THTX	REAL	13	9.7994D-06
	610	ELEMENT	1	RE2	THTX	IMAG	13	1.8161D-05
	611	ELEMENT	1	RE2	THTY	REAL	13	2.3723D-05
	612	ELEMENT	1	RE2	THTY	IMAG	13	-1.5814D-05
	613	ELEMENT	1	RE2	THTZ	REAL	13	0.0
	614	ELEMENT	1	RE2	THTZ	IMAG	13	0.0
	615	ELEMENT	2	MS1	MODE	REAL	13	-8.9202D-06
	616	ELEMENT	2	MS1	MODE	IMAG	13	1.5335D-06
	617	ELEMENT	3	MS1	MODE	REAL	13	2.5024D-06
	618	ELEMENT	3	MS1	MODE	IMAG	13	4.5135D-07
	619	ELEMENT	4	MS1	MODE	REAL	13	1.0232D-03
	620	ELEMENT	4	MS1	MODE	IMAG	13	-8.8231D-05
	621	ELEMENT	5	MS1	MODE	REAL	13	5.3725D-04
	622	ELEMENT	5	MS1	MODE	IMAG	13	9.9566D-04
	623	ELEMENT	6	MS1	MODE	REAL	13	-4.2157D-05
	624	ELEMENT	6	MS1	MODE	IMAG	13	1.3070D-04
	625	ELEMENT			FREQ	EIGV	14	1.6190D+01
	626	ELEMENT			DAMP	EIGV	14	5.4393D-02
	627	ELEMENT	1	RE2	QFT1	REAL	14	-4.0198D-02
	628	ELEMENT	1	RE2	QFT1	IMAG	14	-4.8299D-02
	629	ELEMENT	1	RE2	QFT2	REAL	14	-1.1827D-02
	630	ELEMENT	1	RE2	QFT2	IMAG	14	-1.0520D-03
	631	ELEMENT	1	RE2	BETA	REAL	14	1.6508D-04
	632	ELEMENT	1	RE2	BETA	IMAG	14	1.0858D-04
	633	ELEMENT	1	RE2	GAMA	REAL	14	3.4951D-06
	634	ELEMENT	1	RE2	GAMA	IMAG	14	-5.0729D-06
	635	ELEMENT	1	RE2	QT1S	REAL	14	-1.1077D-01
	636	ELEMENT	1	RE2	QT1S	IMAG	14	1.9746D-01
	637	ELEMENT	1	RE2	QT1C	REAL	14	9.1177D-02
	638	ELEMENT	1	RE2	QT1C	IMAG	14	9.5749D-02
	639	ELEMENT	1	RE2	QT2S	REAL	14	1.0000D+00
	640	ELEMENT	1	RE2	QT2S	IMAG	14	0.0
	641	ELEMENT	1	RE2	QT2C	REAL	14	1.1175D-02
	642	ELEMENT	1	RE2	QT2C	IMAG	14	-9.3944D-01
	643	ELEMENT	1	RE2	BETS	REAL	14	1.6406D-04
	644	ELEMENT	1	RE2	BETS	IMAG	14	-3.3647D-04
	645	ELEMENT	1	RE2	BETC	REAL	14	-1.5570D-04
	646	ELEMENT	1	RE2	BETC	IMAG	14	-1.6742D-04
	647	ELEMENT	1	RE2	GAMS	REAL	14	-8.9156D-06
	648	ELEMENT	1	RE2	GAMS	IMAG	14	-1.0398D-04
	649	ELEMENT	1	RE2	GAMC	REAL	14	9.2987D-05
	650	ELEMENT	1	RE2	GAMC	IMAG	14	8.6031D-04
	651	ELEMENT	1	RE2	X	REAL	14	-3.3699D-03
	652	ELEMENT	1	RE2	X	IMAG	14	-8.5092D-04
	653	ELEMENT	1	RE2	Y	REAL	14	-5.9608D-04
	654	ELEMENT	1	RE2	Y	IMAG	14	-7.1687D-03
	655	ELEMENT	1	RE2	Z	REAL	14	-6.7694D-04

656	ELEMENT	1	RE2	Z	IMAG	14	-4.3135D-04
657	ELEMENT	1	RE2	THTX	REAL	14	1.1086D-05
658	ELEMENT	1	RE2	THTX	IMAG	14	1.3138D-04
659	ELEMENT	1	RE2	THTY	REAL	14	-6.2396D-05
660	ELEMENT	1	RE2	THTY	IMAG	14	1.5606D-05
661	ELEMENT	1	RE2	THTZ	REAL	14	0.0
662	ELEMENT	1	RE2	THTZ	IMAG	14	0.0
663	ELEMENT	2	MS1	MODE	REAL	14	-1.1697D-05
664	ELEMENT	2	MS1	MODE	IMAG	14	-3.4345D-05
665	ELEMENT	3	MS1	MODE	REAL	14	-7.6391D-06
666	ELEMENT	3	MS1	MODE	IMAG	14	5.8182D-06
667	ELEMENT	4	MS1	MODE	REAL	14	-3.3608D-03
668	ELEMENT	4	MS1	MODE	IMAG	14	-7.7081D-04
669	ELEMENT	5	MS1	MODE	REAL	14	6.0778D-04
670	ELEMENT	5	MS1	MODE	IMAG	14	7.2031D-03
671	ELEMENT	6	MS1	MODE	REAL	14	-4.7807D-06
672	ELEMENT	6	MS1	MODE	IMAG	14	-2.7719D-04
673	ELEMENT			FREQ	EIGV	15	1.9297D+01
674	ELEMENT			DAMP	EIGV	15	4.8171D-02
675	ELEMENT	1	RE2	QFT1	REAL	15	5.6086D-01
676	ELEMENT	1	RE2	QFT1	IMAG	15	4.3229D-01
677	ELEMENT	1	RE2	QFT2	REAL	15	1.0000D+00
678	ELEMENT	1	RE2	QFT2	IMAG	15	0.0
679	ELEMENT	1	RE2	BETA	REAL	15	-2.6108D-03
680	ELEMENT	1	RE2	BETA	IMAG	15	-7.3256D-04
681	ELEMENT	1	RE2	GAMA	REAL	15	-6.0496D-05
682	ELEMENT	1	RE2	GAMA	IMAG	15	6.0050D-05
683	ELEMENT	1	RE2	QT1S	REAL	15	3.6714D-02
684	ELEMENT	1	RE2	QT1S	IMAG	15	1.2676D-02
685	ELEMENT	1	RE2	QT1C	REAL	15	3.1597D-02
686	ELEMENT	1	RE2	QT1C	IMAG	15	3.4295D-02
687	ELEMENT	1	RE2	QT2S	REAL	15	-2.2095D-03
688	ELEMENT	1	RE2	QT2S	IMAG	15	-1.3126D-02
689	ELEMENT	1	RE2	QT2C	REAL	15	-1.4065D-02
690	ELEMENT	1	RE2	QT2C	IMAG	15	3.4525D-02
691	ELEMENT	1	RE2	BETS	REAL	15	-1.0928D-04
692	ELEMENT	1	RE2	BETS	IMAG	15	6.4761D-05
693	ELEMENT	1	RE2	BETC	REAL	15	-3.0118D-03
694	ELEMENT	1	RE2	BETC	IMAG	15	-6.7171D-04
695	ELEMENT	1	RE2	GAMS	REAL	15	-3.3814D-05
696	ELEMENT	1	RE2	GAMS	IMAG	15	-8.3746D-06
697	ELEMENT	1	RE2	GAMC	REAL	15	-3.2386D-05
698	ELEMENT	1	RE2	GAMC	IMAG	15	5.7631D-05
699	ELEMENT	1	RE2	X	REAL	15	1.1092D-03
700	ELEMENT	1	RE2	X	IMAG	15	2.9616D-04
701	ELEMENT	1	RE2	Y	REAL	15	-1.4471D-05
702	ELEMENT	1	RE2	Y	IMAG	15	-6.9622D-06
703	ELEMENT	1	RE2	Z	REAL	15	1.1681D-02
704	ELEMENT	1	RE2	Z	IMAG	15	2.9706D-03
705	ELEMENT	1	RE2	THTX	REAL	15	2.6354D-07
706	ELEMENT	1	RE2	THTX	IMAG	15	1.1252D-07
707	ELEMENT	1	RE2	THTY	REAL	15	-1.3734D-03
708	ELEMENT	1	RE2	THTY	IMAG	15	-3.4869D-04
709	ELEMENT	1	RE2	THTZ	REAL	15	0.0
710	ELEMENT	1	RE2	THTZ	IMAG	15	0.0
711	ELEMENT	2	MS1	MODE	REAL	15	2.3001D-08
712	ELEMENT	2	MS1	MODE	IMAG	15	7.9345D-07
713	ELEMENT	3	MS1	MODE	REAL	15	-1.2412D-05
714	ELEMENT	3	MS1	MODE	IMAG	15	-2.4320D-06
715	ELEMENT	4	MS1	MODE	REAL	15	-2.6646D-03

112	716	ELEMENT	4	MS1	MODE	IMAG	15	-6.6343D-04
	717	ELEMENT	5	MS1	MODE	REAL	15	1.4448D-05
	718	ELEMENT	5	MS1	MODE	IMAG	15	6.1687D-06
	719	ELEMENT	6	MS1	MODE	REAL	15	1.2214D-02
	720	ELEMENT	6	MS1	MODE	IMAG	15	3.1033D-03
	721	ELEMENT			FREQ	EIGV	16	2.0094D+01
	722	ELEMENT			DAMP	EIGV	16	4.0114D-02
	723	ELEMENT	1	RE2	QFT1	REAL	16	-1.8892D-01
	724	ELEMENT	1	RE2	QFT1	IMAG	16	1.5028D-01
	725	ELEMENT	1	RE2	QFT2	REAL	16	1.0000D+00
	726	ELEMENT	1	RE2	QFT2	IMAG	16	0.0
	727	ELEMENT	1	RE2	BETA	REAL	16	5.9687D-04
	728	ELEMENT	1	RE2	BETA	IMAG	16	-6.8826D-05
	729	ELEMENT	1	RE2	GAMA	REAL	16	-4.6321D-05
	730	ELEMENT	1	RE2	GAMA	IMAG	16	-2.2638D-05
	731	ELEMENT	1	RE2	QT1S	REAL	16	-5.4208D-03
	732	ELEMENT	1	RE2	QT1S	IMAG	16	-4.3789D-04
	733	ELEMENT	1	RE2	QT1C	REAL	16	-3.3594D-03
	734	ELEMENT	1	RE2	QT1C	IMAG	16	-2.0146D-03
	735	ELEMENT	1	RE2	QT2S	REAL	16	-1.1124D-03
	736	ELEMENT	1	RE2	QT2S	IMAG	16	1.6658D-03
	737	ELEMENT	1	RE2	QT2C	REAL	16	-2.6697D-03
	738	ELEMENT	1	RE2	QT2C	IMAG	16	-1.2734D-02
	739	ELEMENT	1	RE2	BETS	REAL	16	1.1487D-05
	740	ELEMENT	1	RE2	BETS	IMAG	16	-1.4117D-05
	741	ELEMENT	1	RE2	BETC	REAL	16	3.9252D-04
	742	ELEMENT	1	RE2	BETC	IMAG	16	-8.8990D-05
	743	ELEMENT	1	RE2	GAMS	REAL	16	-2.6274D-05
	744	ELEMENT	1	RE2	GAMS	IMAG	16	6.9916D-06
	745	ELEMENT	1	RE2	GAMC	REAL	16	-7.0816D-08
	746	ELEMENT	1	RE2	GAMC	IMAG	16	-2.1531D-05
	747	ELEMENT	1	RE2	X	REAL	16	-3.7777D-04
	748	ELEMENT	1	RE2	X	IMAG	16	1.0619D-04
	749	ELEMENT	1	RE2	Y	REAL	16	1.5201D-06
	750	ELEMENT	1	RE2	Y	IMAG	16	2.2676D-06
	751	ELEMENT	1	RE2	Z	REAL	16	-1.6338D-03
	752	ELEMENT	1	RE2	Z	IMAG	16	3.3224D-04
	753	ELEMENT	1	RE2	THTX	REAL	16	-2.6726D-08
	754	ELEMENT	1	RE2	THTX	IMAG	16	-3.8945D-08
	755	ELEMENT	1	RE2	THTY	REAL	16	1.8240D-04
	756	ELEMENT	1	RE2	THTY	IMAG	16	-3.5805D-05
	757	ELEMENT	1	RE2	THTZ	REAL	16	0.0
	758	ELEMENT	1	RE2	THTZ	IMAG	16	0.0
	759	ELEMENT	2	MS1	MODE	REAL	16	-5.4873D-08
	760	ELEMENT	2	MS1	MODE	IMAG	16	-1.3246D-07
	761	ELEMENT	3	MS1	MODE	REAL	16	4.2427D-06
	762	ELEMENT	3	MS1	MODE	IMAG	16	-1.3711D-06
	763	ELEMENT	4	MS1	MODE	REAL	16	1.3269D-04
	764	ELEMENT	4	MS1	MODE	IMAG	16	4.8722D-06
	765	ELEMENT	5	MS1	MODE	REAL	16	-1.4652D-06
	766	ELEMENT	5	MS1	MODE	IMAG	16	-2.1351D-06
	767	ELEMENT	6	MS1	MODE	REAL	16	-1.6603D-03
	768	ELEMENT	6	MS1	MODE	IMAG	16	3.3126D-04
	769	ELEMENT			FREQ	EIGV	17	2.4882D+01
	770	ELEMENT			DAMP	EIGV	17	3.5814D-02
	771	ELEMENT	1	RE2	QFT1	REAL	17	-3.3743D-02
	772	ELEMENT	1	RE2	QFT1	IMAG	17	-5.9936D-03
	773	ELEMENT	1	RE2	QFT2	REAL	17	1.1030D-02
	774	ELEMENT	1	RE2	QFT2	IMAG	17	-1.0584D-03
	775	ELEMENT	1	RE2	BETA	REAL	17	1.6677D-04



776	ELEMENT	1	RE2	BETA	IMAG	17	2.2504D-05
777	ELEMENT	1	RE2	GAMA	REAL	17	-1.4602D-07
778	ELEMENT	1	RE2	GAMA	IMAG	17	-3.4115D-06
779	ELEMENT	1	RE2	QT1S	REAL	17	-1.0837D-01
780	ELEMENT	1	RE2	QT1S	IMAG	17	1.3286D-01
781	ELEMENT	1	RE2	QT1C	REAL	17	-1.3344D-01
782	ELEMENT	1	RE2	QT1C	IMAG	17	-1.0779D-01
783	ELEMENT	1	RE2	QT2S	REAL	17	1.0000D+00
784	ELEMENT	1	RE2	QT2S	IMAG	17	0.0
785	ELEMENT	1	RE2	QT2C	REAL	17	2.4177D-03
786	ELEMENT	1	RE2	QT2C	IMAG	17	9.9744D-01
787	ELEMENT	1	RE2	BETS	REAL	17	2.1250D-04
788	ELEMENT	1	RE2	BETS	IMAG	17	1.2142D-04
789	ELEMENT	1	RE2	BETC	REAL	17	-9.0671D-05
790	ELEMENT	1	RE2	BETC	IMAG	17	2.3062D-04
791	ELEMENT	1	RE2	GAMS	REAL	17	-5.0637D-04
792	ELEMENT	1	RE2	GAMS	IMAG	17	-5.2645D-05
793	ELEMENT	1	RE2	GAMC	REAL	17	4.4576D-05
794	ELEMENT	1	RE2	GAMC	IMAG	17	-4.9591D-04
795	ELEMENT	1	RE2	X	REAL	17	-2.7781D-03
796	ELEMENT	1	RE2	X	IMAG	17	6.2201D-05
797	ELEMENT	1	RE2	Y	REAL	17	1.8416D-04
798	ELEMENT	1	RE2	Y	IMAG	17	2.6403D-03
799	ELEMENT	1	RE2	Z	REAL	17	-6.9764D-04
800	ELEMENT	1	RE2	Z	IMAG	17	-9.1069D-05
801	ELEMENT	1	RE2	THTX	REAL	17	-3.2922D-06
802	ELEMENT	1	RE2	THTX	IMAG	17	-4.7110D-05
803	ELEMENT	1	RE2	THTY	REAL	17	-3.3056D-05
804	ELEMENT	1	RE2	THTY	IMAG	17	1.3590D-05
805	ELEMENT	1	RE2	THTZ	REAL	17	0.0
806	ELEMENT	1	RE2	THTZ	IMAG	17	0.0
807	ELEMENT	2	MS1	MODE	REAL	17	-3.6671D-06
808	ELEMENT	2	MS1	MODE	IMAG	17	-5.7470D-05
809	ELEMENT	3	MS1	MODE	REAL	17	-3.8678D-05
810	ELEMENT	3	MS1	MODE	IMAG	17	4.0089D-06
811	ELEMENT	4	MS1	MODE	REAL	17	-2.6899D-03
812	ELEMENT	4	MS1	MODE	IMAG	17	9.2136D-05
813	ELEMENT	5	MS1	MODE	REAL	17	-1.8049D-04
814	ELEMENT	5	MS1	MODE	IMAG	17	-2.5828D-03
815	ELEMENT	6	MS1	MODE	REAL	17	-1.5965D-04
816	ELEMENT	6	MS1	MODE	IMAG	17	-1.0950D-04

\*\*\*\*\* STATISTICS \*\*\*\*\*

FINAL SIZE OF WORKING STORAGE (MAXSIZ) IS 14529 WORDS.

BASE PROGRAM CASE 12  
E-927 MATRICES - 5 MODE SHAPES  
REAL EIGENSOLUTION - EG2  
FREQUENCY (HZ)

114

1.1	816.1	0.0
1.1	FREQEIGV	1
2.1	DAMPEIGV	1
3.1	1RE2 QFT1REAL	1
4.1	1RE2 QFT1IMAG	1
5.1	1RE2 QFT2REAL	1
6.1	1RE2 QFT2IMAG	1
7.1	1RE2 BETAREAL	1
8.1	1RE2 BETAIMAG	1
9.1	1RE2 GAMAREAL	1
10.1	1RE2 GAMAIMAG	1
11.1	1RE2 QT1SREAL	1
12.1	1RE2 QT1SIMAG	1
13.1	1RE2 QT1CREAL	1
14.1	1RE2 QT1CIMAG	1
15.1	1RE2 QT2SREAL	1
16.1	1RE2 QT2SIMAG	1
17.1	1RE2 QT2CREAL	1
18.1	1RE2 QT2CIMAG	1
19.1	1RE2 BETSREAL	1
20.1	1RE2 BETSIMAG	1
21.1	1RE2 BETCREAL	1
22.1	1RE2 BETCIMAG	1
23.1	1RE2 GAMSREAL	1
24.1	1RE2 GAMSIMAG	1
25.1	1RE2 GAMCREAL	1
26.1	1RE2 GAMCIMAG	1
27.1	1RE2 X REAL	1
28.1	1RE2 X IMAG	1
29.1	1RE2 Y REAL	1
30.1	1RE2 Y IMAG	1
31.1	1RE2 Z REAL	1
32.1	1RE2 Z IMAG	1
33.1	1RE2 THTXREAL	1
34.1	1RE2 THTXIMAG	1
35.1	1RE2 THTYREAL	1
36.1	1RE2 THTYIMAG	1
37.1	1RE2 THTZREAL	1
38.1	1RE2 THTZIMAG	1
39.1	2MS1 MODEREAL	1
40.1	2MS1 MODEIMAG	1
41.1	3MS1 MODEREAL	1
42.1	3MS1 MODEIMAG	1
43.1	4MS1 MODEREAL	1
44.1	4MS1 MODEIMAG	1
45.1	5MS1 MODEREAL	1
46.1	5MS1 MODEIMAG	1
47.1	6MS1 MODEREAL	1
48.1	6MS1 MODEIMAG	1
49.1	FREQEIGV	2
50.1	DAMPEIGV	2
51.1	1RE2 QFT1REAL	2
52.1	1RE2 QFT1IMAG	2
53.1	1RE2 QFT2REAL	2
54.1	1RE2 QFT2IMAG	2
55.1	1RE2 BETAREAL	2

NOTE: DATA WRITTEN TO UNIT 2 FOR PLOTTING

17 EIGENVALUES - 46 EIGENVECTOR COMPONENTS

56.1	1RE2 BETAIMAG	2
57.1	1RE2 GAMAREAL	2
58.1	1RE2 GAMAIMAG	2
59.1	1RE2 QT1SREAL	2
60.1	1RE2 QT1SIMAG	2
61.1	1RE2 QT1CREAL	2
62.1	1RE2 QT1CIMAG	2
63.1	1RE2 QT2SREAL	2
64.1	1RE2 QT2SIMAG	2
65.1	1RE2 QT2CREAL	2
66.1	1RE2 QT2CIMAG	2
67.1	1RE2 BETSREAL	2
68.1	1RE2 BETSIMAG	2
69.1	1RE2 BETCREAL	2
70.1	1RE2 BETCIMAG	2
71.1	1RE2 GAMSREAL	2
72.1	1RE2 GAMSIMAG	2
73.1	1RE2 GAMCREAL	2
74.1	1RE2 GAMCIMAG	2
75.1	1RE2 X REAL	2
76.1	1RE2 X IMAG	2
77.1	1RE2 Y REAL	2
78.1	1RE2 Y IMAG	2
79.1	1RE2 Z REAL	2
80.1	1RE2 Z IMAG	2
81.1	1RE2 THTXREAL	2
82.1	1RE2 THTXIMAG	2
83.1	1RE2 THTYREAL	2
84.1	1RE2 THTYIMAG	2
85.1	1RE2 THTZREAL	2
86.1	1RE2 THTZIMAG	2
87.1	2MS1 MODEREAL	2
88.1	2MS1 MODEIMAG	2
89.1	3MS1 MODEREAL	2
90.1	3MS1 MODEIMAG	2
91.1	4MS1 MODEREAL	2
92.1	4MS1 MODEIMAG	2
93.1	5MS1 MODEREAL	2
94.1	5MS1 MODEIMAG	2
95.1	6MS1 MODEREAL	2
96.1	6MS1 MODEIMAG	2
97.1	FREQEIGV	3
98.1	DAMPEIGV	3
99.1	1RE2 QFT1REAL	3
100.1	1RE2 QFT1IMAG	3
101.1	1RE2 QFT2REAL	3
102.1	1RE2 QFT2IMAG	3
103.1	1RE2 BETAREAL	3
104.1	1RE2 BETAIMAG	3
105.1	1RE2 GAMAREAL	3
106.1	1RE2 GAMAIMAG	3
107.1	1RE2 QT1SREAL	3
108.1	1RE2 QT1SIMAG	3
109.1	1RE2 QT1CREAL	3
110.1	1RE2 QT1CIMAG	3
111.1	1RE2 QT2SREAL	3
112.1	1RE2 QT2SIMAG	3
113.1	1RE2 QT2CREAL	3
114.1	1RE2 QT2CIMAG	3
115.1	1RE2 BETSREAL	3

116

116.1	1RE2 BETSIMAG	3
117.1	1RE2 BETCREAL	3
118.1	1RE2 BETCIMAG	3
119.1	1RE2 GAMSREAL	3
120.1	1RE2 GAMSIMAG	3
121.1	1RE2 GAMCREAL	3
122.1	1RE2 GAMCIMAG	3
123.1	1RE2 X REAL	3
124.1	1RE2 X IMAG	3
125.1	1RE2 Y REAL	3
126.1	1RE2 Y IMAG	3
127.1	1RE2 Z REAL	3
128.1	1RE2 Z IMAG	3
129.1	1RE2 THTXREAL	3
130.1	1RE2 THTXIMAG	3
131.1	1RE2 THTYREAL	3
132.1	1RE2 THTYIMAG	3
133.1	1RE2 THTZREAL	3
134.1	1RE2 THTZIMAG	3
135.1	2MS1 MODEREAL	3
136.1	2MS1 MODEIMAG	3
137.1	3MS1 MODEREAL	3
138.1	3MS1 MODEIMAG	3
139.1	4MS1 MODEREAL	3
140.1	4MS1 MODEIMAG	3
141.1	5MS1 MODEREAL	3
142.1	5MS1 MODEIMAG	3
143.1	6MS1 MODEREAL	3
144.1	6MS1 MODEIMAG	3
145.1	FREQEIGV	4
146.1	DAMPEIGV	4
147.1	1RE2 QFT1REAL	4
148.1	1RE2 QFT1IMAG	4
149.1	1RE2 QFT2REAL	4
150.1	1RE2 QFT2IMAG	4
151.1	1RE2 BETAREAL	4
152.1	1RE2 BETAIMAG	4
153.1	1RE2 GAMAREAL	4
154.1	1RE2 GAMAIMAG	4
155.1	1RE2 QT1SREAL	4
156.1	1RE2 QT1SIMAG	4
157.1	1RE2 QT1CREAL	4
158.1	1RE2 QT1CIMAG	4
159.1	1RE2 QT2SREAL	4
160.1	1RE2 QT2SIMAG	4
161.1	1RE2 QT2CREAL	4
162.1	1RE2 QT2CIMAG	4
163.1	1RE2 BETSREAL	4
164.1	1RE2 BETSIMAG	4
165.1	1RE2 BETCREAL	4
166.1	1RE2 BETCIMAG	4
167.1	1RE2 GAMSREAL	4
168.1	1RE2 GAMSIMAG	4
169.1	1RE2 GAMCREAL	4
170.1	1RE2 GAMCIMAG	4
171.1	1RE2 X REAL	4
172.1	1RE2 X IMAG	4
173.1	1RE2 Y REAL	4
174.1	1RE2 Y IMAG	4
175.1	1RE2 Z REAL	4

176.1	1RE2 Z IMAG	4
177.1	1RE2 THTXREAL	4
178.1	1RE2 THTXIMAG	4
179.1	1RE2 THTYREAL	4
180.1	1RE2 THTYIMAG	4
181.1	1RE2 THTZREAL	4
182.1	1RE2 THTZIMAG	4
183.1	2MS1 MODEREAL	4
184.1	2MS1 MODEIMAG	4
185.1	3MS1 MODEREAL	4
186.1	3MS1 MODEIMAG	4
187.1	4MS1 MODEREAL	4
188.1	4MS1 MODEIMAG	4
189.1	5MS1 MODEREAL	4
190.1	5MS1 MODEIMAG	4
191.1	6MS1 MODEREAL	4
192.1	6MS1 MODEIMAG	4
193.1	FREQEIGV	5
194.1	DAMPEIGV	5
195.1	1RE2 QFT1REAL	5
196.1	1RE2 QFT1IMAG	5
197.1	1RE2 QFT2REAL	5
198.1	1RE2 QFT2IMAG	5
199.1	1RE2 BETAREAL	5
200.1	1RE2 BETAIMAG	5
201.1	1RE2 GAMAREAL	5
202.1	1RE2 GAMAIMAG	5
203.1	1RE2 QT1SREAL	5
204.1	1RE2 QT1SIMAG	5
205.1	1RE2 QT1CREAL	5
206.1	1RE2 QT1CIMAG	5
207.1	1RE2 QT2SREAL	5
208.1	1RE2 QT2SIMAG	5
209.1	1RE2 QT2CREAL	5
210.1	1RE2 QT2CIMAG	5
211.1	1RE2 BETSREAL	5
212.1	1RE2 BETSIMAG	5
213.1	1RE2 BETCREAL	5
214.1	1RE2 BETCIMAG	5
215.1	1RE2 GAMSREAL	5
216.1	1RE2 GAMSIMAG	5
217.1	1RE2 GAMCREAL	5
218.1	1RE2 GAMCIMAG	5
219.1	1RE2 X REAL	5
220.1	1RE2 X IMAG	5
221.1	1RE2 Y REAL	5
222.1	1RE2 Y IMAG	5
223.1	1RE2 Z REAL	5
224.1	1RE2 Z IMAG	5
225.1	1RE2 THTXREAL	5
226.1	1RE2 THTXIMAG	5
227.1	1RE2 THTYREAL	5
228.1	1RE2 THTYIMAG	5
229.1	1RE2 THTZREAL	5
230.1	1RE2 THTZIMAG	5
231.1	2MS1 MODEREAL	5
232.1	2MS1 MODEIMAG	5
233.1	3MS1 MODEREAL	5
234.1	3MS1 MODEIMAG	5
235.1	4MS1 MODEREAL	5

118	236.1	4MS1 MODEIMAG	5
	237.1	5MS1 MODEREAL	5
	238.1	5MS1 MODEIMAG	5
	239.1	6MS1 MODEREAL	5
	240.1	6MS1 MODEIMAG	5
	241.1	FREQEIGV	6
	242.1	DAMPEIGV	6
	243.1	1RE2 QFT1REAL	6
	244.1	1RE2 QFT1IMAG	6
	245.1	1RE2 QFT2REAL	6
	246.1	1RE2 QFT2IMAG	6
	247.1	1RE2 BETAREAL	6
	248.1	1RE2 BETAIMAG	6
	249.1	1RE2 GAMAREAL	6
	250.1	1RE2 GAMAIMAG	6
	251.1	1RE2 QT1SREAL	6
	252.1	1RE2 QT1SIMAG	6
	253.1	1RE2 QT1CREAL	6
	254.1	1RE2 QT1CIMAG	6
	255.1	1RE2 QT2SREAL	6
	256.1	1RE2 QT2SIMAG	6
	257.1	1RE2 QT2CREAL	6
	258.1	1RE2 QT2CIMAG	6
	259.1	1RE2 BETSREAL	6
	260.1	1RE2 BETSIMAG	6
	261.1	1RE2 BETCREAL	6
	262.1	1RE2 BETCIMAG	6
	263.1	1RE2 GAMSREAL	6
	264.1	1RE2 GAMSIMAG	6
	265.1	1RE2 GAMCREAL	6
	266.1	1RE2 GAMCIMAG	6
	267.1	1RE2 X REAL	6
	268.1	1RE2 X IMAG	6
	269.1	1RE2 Y REAL	6
	270.1	1RE2 Y IMAG	6
	271.1	1RE2 Z REAL	6
	272.1	1RE2 Z IMAG	6
	273.1	1RE2 THTXREAL	6
	274.1	1RE2 THTXIMAG	6
	275.1	1RE2 THTYREAL	6
	276.1	1RE2 THTYIMAG	6
	277.1	1RE2 THTZREAL	6
	278.1	1RE2 THTZIMAG	6
	279.1	2MS1 MODEREAL	6
	280.1	2MS1 MODEIMAG	6
	281.1	3MS1 MODEREAL	6
	282.1	3MS1 MODEIMAG	6
	283.1	4MS1 MODEREAL	6
	284.1	4MS1 MODEIMAG	6
	285.1	5MS1 MODEREAL	6
	286.1	5MS1 MODEIMAG	6
	287.1	6MS1 MODEREAL	6
	288.1	6MS1 MODEIMAG	6
	289.1	FREQEIGV	7
	290.1	DAMPEIGV	7
	291.1	1RE2 QFT1REAL	7
	292.1	1RE2 QFT1IMAG	7
	293.1	1RE2 QFT2REAL	7
	294.1	1RE2 QFT2IMAG	7
	295.1	1RE2 BETAREAL	7

296.1	1RE2 BETAIMAG	7
297.1	1RE2 GAMAREAL	7
298.1	1RE2 GAMAIMAG	7
299.1	1RE2 QT1SREAL	7
300.1	1RE2 QT1SIMAG	7
301.1	1RE2 QT1CREAL	7
302.1	1RE2 QT1CIMAG	7
303.1	1RE2 QT2SREAL	7
304.1	1RE2 QT2SIMAG	7
305.1	1RE2 QT2CREAL	7
306.1	1RE2 QT2CIMAG	7
307.1	1RE2 BETSREAL	7
308.1	1RE2 BETSIMAG	7
309.1	1RE2 BETCREAL	7
310.1	1RE2 BETCIMAG	7
311.1	1RE2 GAMSREAL	7
312.1	1RE2 GAMSIMAG	7
313.1	1RE2 GAMCREAL	7
314.1	1RE2 GAMCIMAG	7
315.1	1RE2 X REAL	7
316.1	1RE2 X IMAG	7
317.1	1RE2 Y REAL	7
318.1	1RE2 Y IMAG	7
319.1	1RE2 Z REAL	7
320.1	1RE2 Z IMAG	7
321.1	1RE2 THTXREAL	7
322.1	1RE2 THTXIMAG	7
323.1	1RE2 THTYREAL	7
324.1	1RE2 THTYIMAG	7
325.1	1RE2 THTZREAL	7
326.1	1RE2 THTZIMAG	7
327.1	2MS1 MODEREAL	7
328.1	2MS1 MODEIMAG	7
329.1	3MS1 MODEREAL	7
330.1	3MS1 MODEIMAG	7
331.1	4MS1 MODEREAL	7
332.1	4MS1 MODEIMAG	7
333.1	5MS1 MODEREAL	7
334.1	5MS1 MODEIMAG	7
335.1	6MS1 MODEREAL	7
336.1	6MS1 MODEIMAG	7
337.1	FREQEIGV	8
338.1	DAMPEIGV	8
339.1	1RE2 QFT1REAL	8
340.1	1RE2 QFT1IMAG	8
341.1	1RE2 QFT2REAL	8
342.1	1RE2 QFT2IMAG	8
343.1	1RE2 BETAREAL	8
344.1	1RE2 BETAIMAG	8
345.1	1RE2 GAMAREAL	8
346.1	1RE2 GAMAIMAG	8
347.1	1RE2 QT1SREAL	8
348.1	1RE2 QT1SIMAG	8
349.1	1RE2 QT1CREAL	8
350.1	1RE2 QT1CIMAG	8
351.1	1RE2 QT2SREAL	8
352.1	1RE2 QT2SIMAG	8
353.1	1RE2 QT2CREAL	8
354.1	1RE2 QT2CIMAG	8
355.1	1RE2 BETSREAL	8

356.1	1RE2 BETSIMAG	8
357.1	1RE2 BETCREAL	8
358.1	1RE2 BETCIMAG	8
359.1	1RE2 GAMSREAL	8
360.1	1RE2 GAMSIMAG	8
361.1	1RE2 GAMCREAL	8
362.1	1RE2 GAMCIMAG	8
363.1	1RE2 X REAL	8
364.1	1RE2 X IMAG	8
365.1	1RE2 Y REAL	8
366.1	1RE2 Y IMAG	8
367.1	1RE2 Z REAL	8
368.1	1RE2 Z IMAG	8
369.1	1RE2 THTXREAL	8
370.1	1RE2 THTXIMAG	8
371.1	1RE2 THTYREAL	8
372.1	1RE2 THTYIMAG	8
373.1	1RE2 THTZREAL	8
374.1	1RE2 THTZIMAG	8
375.1	2MS1 MODERREAL	8
376.1	2MS1 MODEIMAG	8
377.1	3MS1 MODERREAL	8
378.1	3MS1 MODEIMAG	8
379.1	4MS1 MODERREAL	8
380.1	4MS1 MODEIMAG	8
381.1	5MS1 MODERREAL	8
382.1	5MS1 MODEIMAG	8
383.1	6MS1 MODERREAL	8
384.1	6MS1 MODEIMAG	8
385.1	FREQEIGV	9
386.1	DAMPEIGV	9
387.1	1RE2 QFTIREAL	9
388.1	1RE2 QFTIIMAG	9
389.1	1RE2 QFT2REAL	9
390.1	1RE2 QFT2IMAG	9
391.1	1RE2 BETAREAL	9
392.1	1RE2 BETAIMAG	9
393.1	1RE2 GAMAREAL	9
394.1	1RE2 GAMAIMAG	9
395.1	1RE2 QT1SREAL	9
396.1	1RE2 QT1SIMAG	9
397.1	1RE2 QT1CREAL	9
398.1	1RE2 QT1CIMAG	9
399.1	1RE2 QT2SREAL	9
400.1	1RE2 QT2SIMAG	9
401.1	1RE2 QT2CREAL	9
402.1	1RE2 QT2CIMAG	9
403.1	1RE2 BETSREAL	9
404.1	1RE2 BETSIMAG	9
405.1	1RE2 BETCREAL	9
406.1	1RE2 BETCIMAG	9
407.1	1RE2 GAMSREAL	9
408.1	1RE2 GAMSIMAG	9
409.1	1RE2 GAMCREAL	9
410.1	1RE2 GAMCIMAG	9
411.1	1RE2 X REAL	9
412.1	1RE2 X IMAG	9
413.1	1RE2 Y REAL	9
414.1	1RE2 Y IMAG	9
415.1	1RE2 Z REAL	9



416.1	1RE2 Z IMAG	9
417.1	1RE2 THTXREAL	9
418.1	1RE2 THTXIMAG	9
419.1	1RE2 THTYREAL	9
420.1	1RE2 THTYIMAG	9
421.1	1RE2 THTZREAL	9
422.1	1RE2 THTZIMAG	9
423.1	2MS1 MODERREAL	9
424.1	2MS1 MODEIMAG	9
425.1	3MS1 MODERREAL	9
426.1	3MS1 MODEIMAG	9
427.1	4MS1 MODERREAL	9
428.1	4MS1 MODEIMAG	9
429.1	5MS1 MODERREAL	9
430.1	5MS1 MODEIMAG	9
431.1	6MS1 MODERREAL	9
432.1	6MS1 MODEIMAG	9
433.1	FREQEIGV	10
434.1	DAMPEIGV	10
435.1	1RE2 QFT1REAL	10
436.1	1RE2 QFT1IMAG	10
437.1	1RE2 QFT2REAL	10
438.1	1RE2 QFT2IMAG	10
439.1	1RE2 BETAREAL	10
440.1	1RE2 BETAIMAG	10
441.1	1RE2 GAMAREAL	10
442.1	1RE2 GAMAIMAG	10
443.1	1RE2 QT1SREAL	10
444.1	1RE2 QT1SIMAG	10
445.1	1RE2 QT1CREAL	10
446.1	1RE2 QT1CIMAG	10
447.1	1RE2 QT2SREAL	10
448.1	1RE2 QT2SIMAG	10
449.1	1RE2 QT2CREAL	10
450.1	1RE2 QT2CIMAG	10
451.1	1RE2 BETSREAL	10
452.1	1RE2 BETSIMAG	10
453.1	1RE2 BETCREAL	10
454.1	1RE2 BETCIMAG	10
455.1	1RE2 GAMSREAL	10
456.1	1RE2 GAMSIMAG	10
457.1	1RE2 GAMCREAL	10
458.1	1RE2 GAMCIMAG	10
459.1	1RE2 X REAL	10
460.1	1RE2 X IMAG	10
461.1	1RE2 Y REAL	10
462.1	1RE2 Y IMAG	10
463.1	1RE2 Z REAL	10
464.1	1RE2 Z IMAG	10
465.1	1RE2 THTXREAL	10
466.1	1RE2 THTXIMAG	10
467.1	1RE2 THTYREAL	10
468.1	1RE2 THTYIMAG	10
469.1	1RE2 THTZREAL	10
470.1	1RE2 THTZIMAG	10
471.1	2MS1 MODERREAL	10
472.1	2MS1 MODEIMAG	10
473.1	3MS1 MODERREAL	10
474.1	3MS1 MODEIMAG	10
475.1	4MS1 MODERREAL	10

122	476.1	4MS1	MODEIMAG	10
	477.1	5MS1	MODEREAL	10
	478.1	5MS1	MODEIMAG	10
	479.1	6MS1	MODEREAL	10
	480.1	6MS1	MODEIMAG	10
	481.1		FREQEIGV	11
	482.1		DAMPEIGV	11
	483.1	1RE2	QFT1REAL	11
	484.1	1RE2	QFT1IMAG	11
	485.1	1RE2	QFT2REAL	11
	486.1	1RE2	QFT2IMAG	11
	487.1	1RE2	BETAREAL	11
	488.1	1RE2	BETAIMAG	11
	489.1	1RE2	GAMAREAL	11
	490.1	1RE2	GAMAIMAG	11
	491.1	1RE2	QT1SREAL	11
	492.1	1RE2	QT1SIMAG	11
	493.1	1RE2	QT1CREAL	11
	494.1	1RE2	QT1CIMAG	11
	495.1	1RE2	QT2SREAL	11
	496.1	1RE2	QT2SIMAG	11
	497.1	1RE2	QT2CREAL	11
	498.1	1RE2	QT2CIMAG	11
	499.1	1RE2	BETSREAL	11
	500.1	1RE2	BETSIMAG	11
	501.1	1RE2	BETCREAL	11
	502.1	1RE2	BETCIMAG	11
	503.1	1RE2	GAMSREAL	11
	504.1	1RE2	GAMSIMAG	11
	505.1	1RE2	GAMCREAL	11
	506.1	1RE2	GAMCIMAG	11
	507.1	1RE2	X REAL	11
	508.1	1RE2	X IMAG	11
	509.1	1RE2	Y REAL	11
	510.1	1RE2	Y IMAG	11
	511.1	1RE2	Z REAL	11
	512.1	1RE2	Z IMAG	11
	513.1	1RE2	THTXREAL	11
	514.1	1RE2	THTXIMAG	11
	515.1	1RE2	THTYREAL	11
	516.1	1RE2	THTYIMAG	11
	517.1	1RE2	THTZREAL	11
	518.1	1RE2	THTZIMAG	11
	519.1	2MS1	MODEREAL	11
	520.1	2MS1	MODEIMAG	11
	521.1	3MS1	MODEREAL	11
	522.1	3MS1	MODEIMAG	11
	523.1	4MS1	MODEREAL	11
	524.1	4MS1	MODEIMAG	11
	525.1	5MS1	MODEREAL	11
	526.1	5MS1	MODEIMAG	11
	527.1	6MS1	MODEREAL	11
	528.1	6MS1	MODEIMAG	11
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	530.1		DAMPEIGV	12
	531.1	1RE2	QFT1REAL	12
	532.1	1RE2	QFT1IMAG	12
	533.1	1RE2	QFT2REAL	12
	534.1	1RE2	QFT2IMAG	12
	535.1	1RE2	BETAREAL	12

536.1	1RE2 BETAIMAG	12
537.1	1RE2 GAMAREAL	12
538.1	1RE2 GAMAIMAG	12
539.1	1RE2 QT1SREAL	12
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542.1	1RE2 QT1CIMAG	12
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562.1	1RE2 THTXIMAG	12
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564.1	1RE2 THTYIMAG	12
565.1	1RE2 THTZREAL	12
566.1	1RE2 THTZIMAG	12
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568.1	2MS1 MODEIMAG	12
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571.1	4MS1 MODEREAL	12
572.1	4MS1 MODEIMAG	12
573.1	5MS1 MODEREAL	12
574.1	5MS1 MODEIMAG	12
575.1	6MS1 MODEREAL	12
576.1	6MS1 MODEIMAG	12
577.1	FREQEIGV	13
578.1	DAMPEIGV	13
579.1	1RE2 QFT1REAL	13
580.1	1RE2 QFT1IMAG	13
581.1	1RE2 QFT2REAL	13
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583.1	1RE2 BETAREAL	13
584.1	1RE2 BETAIMAG	13
585.1	1RE2 GAMAREAL	13
586.1	1RE2 GAMAIMAG	13
587.1	1RE2 QT1SREAL	13
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590.1	1RE2 QT1CIMAG	13
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592.1	1RE2 QT2SIMAG	13
593.1	1RE2 QT2CREAL	13
594.1	1RE2 QT2CIMAG	13
595.1	1RE2 BETSREAL	13

124	596.1	1RE2 BETSIMAG	13
	597.1	1RE2 BETCREAL	13
	598.1	1RE2 BETCIMAG	13
	599.1	1RE2 GAMSREAL	13
	600.1	1RE2 GAMSIMAG	13
	601.1	1RE2 GAMCREAL	13
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	605.1	1RE2 Y REAL	13
	606.1	1RE2 Y IMAG	13
	607.1	1RE2 Z REAL	13
608.1	1RE2 Z IMAG	13	
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614.1	1RE2 THTZIMAG	13	
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616.1	2MS1 MODEIMAG	13	
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621.1	5MS1 MODEREAL	13	
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625.1	FREQEIGV	14	
626.1	DAMPEIGV	14	
627.1	1RE2 QFT1REAL	14	
628.1	1RE2 QFT1IMAG	14	
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632.1	1RE2 BETAIMAG	14	
633.1	1RE2 GAMAREAL	14	
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653.1	1RE2 Y REAL	14	
654.1	1RE2 Y IMAG	14	
655.1	1RE2 Z REAL	14	

656.1	1RE2 Z	IMAG	14
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662.1	1RE2	THTZIMAG	14
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666.1	3MS1	MODEIMAG	14
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668.1	4MS1	MODEIMAG	14
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670.1	5MS1	MODEIMAG	14
671.1	6MS1	MODEREAL	14
672.1	6MS1	MODEIMAG	14
673.1		FREQEIGV	15
674.1		DAMPEIGV	15
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676.1	1RE2	QFT1IMAG	15
677.1	1RE2	QFT2REAL	15
678.1	1RE2	QFT2IMAG	15
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715.1	4MS1	MODEREAL	15

716.1	4MS1	MODEIMAG	15
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719.1	6MS1	MODEREAL	15
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725.1	1RE2	QFT2REAL	16
726.1	1RE2	QFT2IMAG	16
727.1	1RE2	BETAREAL	16
728.1	1RE2	BETAIMAG	16
729.1	1RE2	GAMAREAL	16
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746.1	1RE2	GAMCIMAG	16
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748.1	1RE2	X IMAG	16
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751.1	1RE2	Z REAL	16
752.1	1RE2	Z IMAG	16
753.1	1RE2	THTXREAL	16
754.1	1RE2	THTXIMAG	16
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767.1	6MS1	MODEREAL	16
768.1	6MS1	MODEIMAG	16
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770.1		DAMPEIGV	17
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772.1	1RE2	QFT1IMAG	17
773.1	1RE2	QFT2REAL	17
774.1	1RE2	QFT2IMAG	17
775.1	1RE2	BETAREAL	17

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804.1	1RE2 THTYIMAG	17		
805.1	1RE2 THTZREAL	17		
806.1	1RE2 THTZIMAG	17		
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808.1	2MS1 MODEIMAG	17		
809.1	3MS1 MODEREAL	17		
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1.2054D-02	-1.3417D-02	-1.9632D-03	-7.2498D-04	1.5398D-03
1.0000D+00	0.0	6.1445D-01	3.6538D-01	3.4426D-02
3.8532D-02	-3.1595D-01	-4.2383D-01	6.7054D-02	-7.0727D-02
7.7311D-02	6.5570D-02	-6.8982D-01	2.0753D-01	-2.1469D-01
-7.0287D-01	2.7540D-01	-6.9790D-02	1.4800D-01	8.1339D-02
4.2872D-02	-1.4415D-02	4.8409D-04	1.8746D-03	2.9999D-03
-9.5244D-04	0.0	0.0	-1.7454D-01	-1.8411D-01
8.4564D-02	-6.9311D-03	1.8928D-01	-6.2250D-02	2.6540D-02
1.0277D-01	5.0155D-03	-1.9646D-03	6.1722D+00	2.3605D-02
1.6817D-01	3.0148D-01	1.2487D-02	-1.3787D-02	-2.4954D-03
5.3036D-03	4.5063D-04	3.8557D-04	-6.8468D-01	2.6532D-01
1.0000D+00	0.0	5.9053D-01	7.5994D-01	-4.1830D-02
-1.0062D-01	-4.5155D-02	-2.8329D-02	3.1267D-02	-3.9717D-02
4.3840D-02	3.9807D-01	-3.8170D-01	3.0564D-02	3.2015D-01
3.7569D-01	-2.8384D-02	3.6161D-03	2.0899D-03	-2.0547D-02
1.5974D-03	-2.7681D-04	1.7226D-04	-1.4550D-03	0.0
0.0	-5.9194D-02	1.1560D-02	3.1024D-01	4.6756D-01
9.8713D-03	-9.1146D-02	8.7578D-02	-1.5176D-02	1.1567D-04
-2.3182D-03	7.2977D+00	3.3554D-01	3.5675D-02	-2.1267D-02
-1.7632D-03	-1.3939D-03	3.6116D-04	-3.1185D-04	-3.0457D-05
-2.6636D-05	1.0000D+00	0.0	-1.8039D-02	9.6376D-01
-5.2177D-03	-2.5424D-02	2.3274D-02	4.0853D-03	6.5041D-02
5.3736D-02	-5.3785D-02	6.5067D-02	2.1778D-03	-1.6624D-02
1.6700D-02	2.3077D-03	-4.8780D-03	3.8898D-03	1.8884D-03
2.6635D-03	-1.1143D-03	1.1498D-03	-4.8961D-05	-4.2640D-05
-5.5496D-05	5.2550D-05	0.0	0.0	7.9591D-04
-3.2576D-04	-4.3991D-04	-5.8017D-04	-4.3632D-03	4.3855D-03
-2.6843D-03	-2.3377D-03	-2.4163D-04	2.7267D-04	7.5502D+00
2.8234D-01	6.8603D-04	1.3152D-03	5.4597D-05	-5.7700D-05



6.8864D-06	1.3275D-05	1.0523D-06	-6.5687D-07	1.0000D+00
0.0	1.0282D-03	-9.9950D-01	1.5264D-02	-4.8217D-02
-4.8165D-02	-1.5389D-02	-5.3058D-05	1.5325D-04	1.9944D-04
1.6326D-04	-7.0020D-06	-1.4532D-05	-1.4552D-05	-2.8868D-05
-1.0425D-04	4.0712D-05	-2.9115D-05	-5.8494D-05	-2.8917D-05
-4.2450D-05	7.0216D-07	1.3510D-06	-1.3833D-06	7.3823D-06
0.0	0.0	-9.3806D-06	-1.5574D-05	9.6072D-06
-1.0744D-05	-1.1182D-04	6.8886D-05	3.8496D-05	7.4067D-05
-6.5524D-06	-5.6227D-05	1.1803D+01	1.8116D-01	1.0000D+00
0.0	1.4892D-02	-4.8764D-02	-4.6437D-05	2.3053D-04
1.8028D-05	-1.8917D-05	5.1257D-04	1.3318D-03	-2.2536D-03
1.0132D-03	8.2802D-05	-7.9427D-03	-4.0854D-03	-1.0690D-03
5.3976D-06	-3.8843D-06	1.6566D-05	-2.4153D-05	-7.4601D-05
-1.0026D-04	4.7382D-05	-5.1987D-05	-4.3134D-04	-6.6874D-04
1.4219D-04	2.2038D-05	-2.2497D-04	-1.8421D-04	-2.7197D-06
-3.2689D-07	8.5797D-06	-6.7498D-06	0.0	0.0
6.9167D-06	-4.1159D-06	5.2695D-06	8.6620D-06	-3.9112D-04
-6.6130D-04	-1.4911D-04	-1.7922D-05	-1.4675D-04	-5.1954D-05
1.2701D+01	6.2210D-02	1.0000D+00	0.0	2.1907D-02
-7.3377D-02	-1.0754D-03	1.4396D-03	6.8721D-05	3.5577D-05
9.6465D-03	8.3141D-02	-5.5339D-02	-5.9749D-02	2.8823D-01
-3.6054D-01	-2.4707D-01	-2.0382D-01	3.7177D-04	3.5663D-04
6.8808D-04	-1.1415D-03	2.3205D-03	-3.3099D-03	1.2437D-03
7.7836D-04	1.6638D-02	-2.4610D-02	6.1417D-03	7.4517D-03
3.5694D-03	-5.4659D-03	-1.1739D-04	-1.4049D-04	2.9223D-04
-4.0945D-04	0.0	0.0	2.9419D-04	2.5039D-04
-2.3620D-04	3.4712D-04	1.6810D-02	-2.4800D-02	-6.4359D-03
-7.7021D-03	2.0729D-04	-5.0585D-04	1.4810D+01	4.4915D-02
2.9431D-01	-2.3843D-01	-5.3909D-03	-4.6868D-02	-4.4755D-04
9.1262D-04	3.1502D-05	1.4475D-05	-3.4647D-02	4.0536D-01
-4.6601D-01	1.8823D-01	2.5103D-01	4.5448D-01	1.0000D+00
0.0	-1.6889D-03	-1.9291D-04	4.2302D-04	-8.8155D-04
2.6011D-03	-5.3039D-03	6.4872D-03	2.5857D-03	7.2247D-03
-1.8145D-02	-3.5612D-02	-7.7079D-03	1.6902D-03	-3.6384D-03
6.5955D-04	1.4164D-04	1.0768D-04	-3.3992D-04	0.0
0.0	-5.4782D-04	-5.7396D-05	-5.2956D-05	3.2130D-05
7.2001D-03	-1.8176D-02	3.6160D-02	7.7653D-03	2.5015D-04
-3.1302D-06	1.6181D+01	1.3683D-01	1.1996D-02	1.0588D-02
2.2476D-03	1.0615D-03	-4.0109D-05	-2.7377D-05	-7.3971D-07
1.2207D-06	1.0000D+00	0.0	-1.7328D-03	9.9569D-01
1.6855D-02	-5.2916D-02	3.9212D-02	4.3478D-02	-1.2585D-04
1.3860D-04	-1.3046D-04	-1.2905D-04	2.3634D-04	-4.6696D-05
8.1719D-05	2.3306D-04	1.0126D-03	-4.7264D-05	-5.2833D-04
-9.9720D-04	1.6249D-04	1.1305D-04	9.7994D-06	1.8161D-05
2.3723D-05	-1.5814D-05	0.0	0.0	-8.9202D-06
1.5335D-06	2.5024D-06	4.5135D-07	1.0232D-03	-8.8231D-05
5.3725D-04	9.9566D-04	-4.2157D-05	1.3070D-04	1.6190D+01
5.4393D-02	-4.0198D-02	-4.8299D-02	-1.1827D-02	-1.0520D-03
1.6508D-04	1.0858D-04	3.4951D-06	-5.0729D-06	-1.1077D-01
1.9746D-01	9.1177D-02	9.5749D-02	1.0000D+00	0.0
1.1175D-02	-9.3944D-01	1.6406D-04	-3.3647D-04	-1.5570D-04
-1.6742D-04	-8.9156D-06	-1.0398D-04	9.2987D-05	8.6031D-04
-3.3699D-03	-8.5092D-04	-5.9608D-04	-7.1687D-03	-6.7694D-04
-4.3135D-04	1.1086D-05	1.3138D-04	-6.2396D-05	1.5606D-05
0.0	0.0	-1.1697D-05	-3.4345D-05	-7.6391D-06
5.8182D-06	-3.3608D-03	-7.7081D-04	6.0778D-04	7.2031D-03
-4.7807D-06	-2.7719D-04	1.9297D+01	4.8171D-02	5.6086D-01
4.3229D-01	1.0000D+00	0.0	-2.6108D-03	-7.3256D-04
-6.0496D-05	6.0050D-05	3.6714D-02	1.2676D-02	3.1597D-02
3.4295D-02	-2.2085D-03	-1.3126D-02	-1.4065D-02	3.4525D-02

130

-1.0928D-04	6.4761D-05	-3.0118D-03	-6.7171D-04	-3.3814D-05
-8.3746D-06	-3.2386D-05	5.7631D-05	1.1092D-03	2.9616D-04
-1.4471D-05	-6.9622D-06	1.1681D-02	2.9706D-03	2.6354D-07
1.1252D-07	-1.3734D-03	-3.4869D-04	0.0	0.0
2.3001D-08	7.9345D-07	-1.2412D-05	-2.4320D-06	-2.6646D-03
-6.6343D-04	1.4448D-05	6.1687D-06	1.2214D-02	3.1033D-03
2.0094D+01	4.0114D-02	-1.8892D-01	1.5028D-01	1.0000D+00
0.0	5.9687D-04	-6.8826D-05	-4.6321D-05	-2.2638D-05
-5.4208D-03	-4.3789D-04	-3.3594D-03	-2.0146D-03	-1.1124D-03
1.6658D-03	-2.6697D-03	-1.2734D-02	1.1487D-05	-1.4117D-05
3.9252D-04	-8.8990D-05	-2.6274D-05	6.9916D-06	-7.0816D-08
-2.1531D-05	-3.7777D-04	1.0619D-04	1.5201D-06	2.2676D-06
-1.6338D-03	3.3224D-04	-2.6726D-08	-3.8945D-08	1.8240D-04
-3.5805D-05	0.0	0.0	-5.4873D-08	-1.3246D-07
4.2427D-06	-1.3711D-06	1.3269D-04	4.8722D-06	-1.4652D-06
-2.1351D-06	-1.6603D-03	3.3126D-04	2.4882D+01	3.5814D-02
-3.3743D-02	-5.9936D-03	1.1030D-02	-1.0584D-03	1.6677D-04
2.2504D-05	-1.4602D-07	-3.4115D-06	-1.0837D-01	1.3286D-01
-1.3344D-01	-1.0779D-01	1.0000D+00	0.0	2.4177D-03
9.9744D-01	2.1250D-04	1.2142D-04	-9.0671D-05	2.3062D-04
-5.0637D-04	-5.2645D-05	4.4576D-05	-4.9591D-04	-2.7781D-03
6.2201D-05	1.8416D-04	2.6403D-03	-6.9764D-04	-9.1069D-05
-3.2922D-06	-4.7110D-05	-3.3056D-05	1.3590D-05	0.0
0.0	-3.6671D-06	-5.7470D-05	-3.8678D-05	4.0089D-06
-2.6899D-03	9.2136D-05	-1.8049D-04	-2.5828D-03	-1.5965D-04
-1.0950D-04				

APPENDIX E. BASE PROGRAM TEST CASE 13

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*****  
* SIMVIB PROGRAM *  
* INPUT AND INTERNAL CALCULATIONS *  
* EMPLOY STANDARD UNITS *  
* (FOOT, POUND, SECOND) *  
*****
```

```
SIMVIB CHECK CASE 13 FOR CDC COMPUTER  
6400 IMPEDANCE - RESULTS IN G'S & LBS  
4 FUSELAGE MODES AND 6 ROTOR D.O.F.  
3RD MODE FREQ
```

# INPUT DECK CARD IMAGE LISTING

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132

MS1	1	0	/* FUSELAGE FIRST MODE SHAPE */	0006000
1 /	3.400D-02	0.0	/* DAMPING RATIO (ND) */	0007000
2 /	1.800D+00	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0008000
3 /	1.610D+01	0.0	/* FREQUENCY (HZ) */	0009000
4 /	1.000D+00	0.0	/* NUMBER OF NODES	0010000
5 /	1.000D+00	0.0	/* NODE NUMBER(S)	0011000
10 /	1.000D+00	1.000D-02	2.400D-01	/* MODE SHAPE AT NODE1 (X-Z) */
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE1(TX-TZ) */
-40 /	0.0	0.0	0.0	/* EULER ANGLES NODE1 (DEG) */
MS1	2	COPY 1	/* FUSELAGE SECOND MODE	0016000
1 /	1.000D-02	0.0	/* DAMPING RATIO (ND) */	0017000
2 /	3.150D+02	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0018000
3 /	1.800D+01	0.0	/* FREQUENCY (HZ) */	0019000
4 /	1.000D+00	0.0	/* NUMBER OF NODES	0020000
5 /	1.000D+00	0.0	/* NODE NUMBER(S)	0021000
10 /	1.000D-02	1.000D+00	1.000D-02	/* MODE SHAPE AT NODE1 (X-Z) */
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE1(TX-TZ) */
-40 /	0.0	0.0	0.0	/* EULER ANGLES NODE1 (DEG) */
MS1	3	COPY 1	/* FUSELAGE THIRD MODE	0026000
1 /	3.000D-02	0.0	/* DAMPING RATIO (ND) */	0027000
2 /	9.600D+00	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0028000
3 /	2.170D+01	0.0	/* FREQUENCY (HZ) */	0029000
4 /	1.000D+00	0.0	/* NUMBER OF NODES	0030000
5 /	1.000D+00	0.0	/* NODE NUMBER(S)	0031000
10 /	1.000D-02	1.000D+00	1.000D-02	/* MODE SHAPE AT NODE1 (X-Z) */
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE1(TX-TZ) */
-40 /	0.0	0.0	0.0	/* EULER ANGLES NODE1 (DEG) */
MS1	4	COPY 1	/* FUSELAGE FOURTH MODE	0036000
1 /	1.500D-02	0.0	/* DAMPING RATIO (ND) */	0037000
2 /	4.000D+01	0.0	/* GENERAL. MASS (LB-SEC2/IN) */	0038000
3 /	2.570D+01	0.0	/* FREQUENCY (HZ) */	0039000
4 /	1.000D+00	0.0	/* NUMBER OF NODES	0040000
5 /	1.000D+00	0.0	/* NODE NUMBER(S)	0041000
10 /	1.000D-02	1.000D+00	1.000D-02	/* MODE SHAPE AT NODE1 (X-Z) */
13 /	0.0	0.0	0.0	/* MODE SHAPE AT NODE1(TX-TZ) */
-40 /	0.0	0.0	0.0	/* EULER ANGLES NODE1 (DEG) */
RE3	7	0	/* ROTOR ELASTIC TYPE 3	0046000
1 /	0.0	0.0	/* READ ROTOR DATA FROM UNIT11 */	0047000
2 /	0.0	0.0	/* NO CHANGE TO HUB EXCITATION */	0048000
3 /	1.000D+00	0.0	/* DISPLAY HUB REACTIONS	0049000
4 /	1.000D+00	0.0	/* ROTOR CONNECTION NODE	0050000
-5 /	0.0	0.0	/* EULER ANGLES (DEG)	0051000
FR1	8	0	/* INPUT FORCING FREQUENCY	0053000
1 /	1.952D+01	0.0	/* FREQUENCY (4P) (HZ) */	0054000
2 /	0.0	0.0	/* DEBUG SWITCH (NO=0, YES=1) */	0055000
-3 /	0.0	0.0	/* GET AMPLITUDES IN FT	0056000
GF1	9	0	/* INPUT GENERALIZED FORCE	0058000
1 /	1.000D+00	0.0	/* NODE NUMBER	0059000
2 /	0.0	0.0	/* EULER ANGLES (DEG)	0060000
5 /	0.0	0.0	/* FORCES (CX,CY,CZ,SX,SY,SZ) */	0061000

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      8 / 0.0      0.0      0.0      /* " " (LBS) */ 0062000
     11 / 0.0      0.0      0.0      /* MOMENTS(CX,CY,CZ,SY,SZ) */ 0063000
    -14 / 0.0      0.0      0.0      /* " " (IN-LB) */ 0064000

PV1      10      0      /* PARAMETRIC VARIATION */ 0066000
  1 / 1.000D+01 0.0      0.0      /* STARTING VALUE (HZ) */ 0067000
  2 / 3.000D+01 0.0      0.0      /* END VALUE (HZ) */ 0068000
  3 / 1.000D+01 0.0      0.0      /* NUMBER OF POINTS */ 0069000
  -4 / 3.000D+00 3.000D+00 0.0      /* ELEMENT NUMBER AND LOCATION*/ 0070000

GEN      11      0      /* GENERAL ELEMENT */ 0072000
  1 / 0.0      0.0      0.0      /* SUPPRESS FINAL RESULTS */ 0073001
  -2 / 1.000D+00 0.0      0.0      /* DO NOT SUPPRESS INPUT LISTS*/ 0073101

END      1      CASE      1      /* END OF CASE 1 */ 0075000

```

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

1

134

1 ZETA DAMPING RATIO (ND) 3.40000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 1.80000D+00

3 OMEGA MODE FREQUENCY (HERTZ) 1.61000D+01

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	1.0000D+00	1.0000D-02	-2.4000D-01	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT: 2

1 ZETA DAMPING RATIO (ND) 1.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 3.15000D+02

3 OMEGA MODE FREQUENCY (HERTZ) 1.80000D+01

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	1.0000D-02	1.0000D+00	1.0000D-02	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

136

1 ZETA DAMPING RATIO (ND) 3.00000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 9.60000D+00

3 OMEGA MODE FREQUENCY (HERTZ) 2.17000D+01

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE  
1 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	1.0000D-02	1.0000D+00	1.0000D-02	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0



COMPONENT:MODSTR1

\*\*\*\*\* MODAL STRUCTURE TYPE 1 \*\*\*\*\*

ELEMENT:

4

1 ZETA DAMPING RATIO (ND) 1.50000D-02

2 M0 GENERALIZED MASS (LB-SEC\*\*2/IN) 4.00000D+01

3 OMEGA MODE FREQUENCY (HERTZ) 2.57000D+01

4 NNODE NUMBER OF NODES DESCRIBED BY THIS MODE 1

5 NODE CONNECTION NODE NUMBERS OF NODES DESCRIBED BY THIS MODE

1 0 0 0 0

10 GAMMA MODE SHAPE. ENTER U, V, W, THETAX, THETAY, THETAZ FOR EACH NODE:

		U	V	W	THETAX	THETAY	THETAZ
10 - 15	NODE 1	1.0000D-02	1.0000D+00	1.0000D-02	0.0	0.0	0.0
16 - 21	NODE 2	0.0	0.0	0.0	0.0	0.0	0.0
22 - 27	NODE 3	0.0	0.0	0.0	0.0	0.0	0.0
28 - 33	NODE 4	0.0	0.0	0.0	0.0	0.0	0.0
34 - 39	NODE 5	0.0	0.0	0.0	0.0	0.0	0.0

40 EULER EULER ANGLES AT CONNECTION NODES. ENTER:

THETA - EULER PITCH ANGLE. ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

PHI - EULER ROLL ANGLE. ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

XSI - EULER YAW ANGLE. ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

		THETA	PHI	XSI
40 - 42	NODE 1	0.0	0.0	0.0
43 - 45	NODE 2	0.0	0.0	0.0
46 - 48	NODE 3	0.0	0.0	0.0
49 - 51	NODE 4	0.0	0.0	0.0
52 - 54	NODE 5	0.0	0.0	0.0

55 --- EMPTY LOCATION

56 Q INITIAL MODAL AMPLITUDE (IN/IN) 0.0

57 DQ INITIAL MODAL VELOCITY (1/SEC) 0.0

COMPONENT:FORCER1

\*\*\*\*\* FORCED RESPONSE SOLUTION TYPE 1 \*\*\*\*\*

ELEMENT:

8

138

1 OMEGA FORCING FREQUENCY (HERTZ) 1.952000+01

2 IDEBUG DEBUG SELECTOR 0

= 0 ==> NO DEBUG PRINTOUT

= 1 ==> TRACE MATRIX ASSEMBLY AND SOLUTION

3 ICONVG OUTPUT DISPLAY SELECTOR 0

= 0 ==> DISPLACEMENTS (FEET)

= 1 ==> ACCELERATIONS (G'S)

COMPONENT:GENFOR1

\*\*\*\*\* GENERALIZED FORCE TYPE 1 (USED WITH FORCER1) \*\*\*\*\*

ELEMENT: 9

1	NCN	CONNECTION NODE NUMBER (NO)	1
2	THETA	EULER PITCH ANGLE (DEGREES) - ROTATE SECOND ABOUT THE Y-AXIS	0.0
3	PHI	EULER ROLL ANGLE (DEGREES) - ROTATE THIRD ABOUT THE X-AXIS	0.0
4	XSI	EULER YAW ANGLE (DEGREES) - ROTATE FIRST ABOUT THE Z-AXIS	0.0
5	FXCOS	COSINE COMPONENT OF X DIRECTION FORCE (LB)	0.0
6	FXSIN	SINE COMPONENT OF X DIRECTION FORCE (LB)	0.0
7	FYCOS	COSINE COMPONENT OF Y DIRECTION FORCE (LB)	0.0
8	FYSIN	SINE COMPONENT OF Y DIRECTION FORCE (LB)	0.0
9	FZCOS	COSINE COMPONENT OF Z DIRECTION FORCE (LB)	0.0
10	FZSIN	SINE COMPONENT OF Z DIRECTION FORCE (LB)	0.0
11	FT1COS	COSINE COMPONENT OF THETA 1 MOMENT (LB)	0.0
12	FT1SIN	SINE COMPONENT OF THETA 1 MOMENT (IN-LB)	0.0
13	FT2COS	COSINE COMPONENT OF THETA 2 MOMENT (IN-LB)	0.0
14	FT2SIN	SINE COMPONENT OF THETA 2 MOMENT (IN-LB)	0.0
15	FT3COS	COSINE COMPONENT OF THETA 3 MOMENT (IN-LB)	0.0
16	FT3SIN	SINE COMPONENT OF THETA 3 MOMENT (IN-LB)	0.0
17	IHRESP	HHC FLAG = 0 HHC NOT ACTIVE = 1 HHC ACTIVE	0
18	WZX	WEIGHT FOR X RESPONSE	0.0
19	WZY	WEIGHT FOR Y RESPONSE	0.0
20	WZZ	WEIGHT FOR Z RESPONSE	0.0
21	WZX	WEIGHT FOR THETA1 RESPONSE	0.0
22	WZY	WEIGHT FOR THETA2 RESPONSE	0.0
23	WZMZ	WEIGHT FOR THETA3 RESPONSE	0.0

COMPONENT:PARMV1

\*\*\*\*\* PARAMETRIC VARIATION TYPE 1 \*\*\*\*\*

ELEMENT: 10

140

1 FIRSTV STARTING VALUE FOR PARAMETRIC VARIATION 1.00000D+01  
 2 FINALV FINAL VALUE FOR PARAMETRIC VARIATION 3.00000D+01  
 3 NPTS NUMBER OF POINTS IN PARAMETRIC VARIATION 10  
 4 NEL GLOBAL ELEMENT NUMBER AND CORRESPONDING LOADER LOCATION FOR INDEPENDENT VARIABLE  
 TO BE PARAMETRICALLY VARIED (UP TO 10 PAIRS)

3	3
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

COMPONENT:GENINPUT

\*\*\*\*\* GENERAL INPUT FOR PROGRAM CONTROL \*\*\*\*\*

ELEMENT: 11

1 ICNTL1 PRINT SELECTOR FOR FINAL RESULTS 0  
 = 0 ==> SUPPRESS LINE PRINTER OUTPUT  
 = 1 ==> FULL LINE PRINTER OUTPUT  
 2 ICNTL2 PRINT SELECTOR FOR COMPONENT INPUTS 1  
 = 0 ==> SUPPRESS LINE PRINTER OUTPUT  
 = 1 ==> FULL LINE PRINTER OUTPUT  
 3-9 ----- OPEN LOCATIONS FOR FUTURE USE  
 10 XINDEP INDEPENDENT VARIABLE FOR 3-D PLOTS 0.0

COMPONENT:ROTOREL3

\*\*\*\*\* ELASTIC ROTOR TYPE 3 \*\*\*\*\*

ELEMENT: 7

## 1 IRDFIL READ FILE FLAG

= 0 READ ROTOR IMPEDANCE AND HUB FORCE VECTOR FROM SAVE FILE 11 (G400 PROGRAM)  
 = 1 READ ROTOR IMPEDANCE AND HUB FORCE VECTOR FROM UNIT 12 (USER INPUT)

NOTE 1 - INPUT DATA FORMAT IS 6G12.4.

NOTE 2 - IF IRDFIL=1, IHHC (LOC 8) AND ISTRSS (LOC 10) ARE SET TO ZERO INTERNALLY.

## 2 ISTFOR SET ROTOR HUB FORCE FLAG

= 0 LEAVE HUB FORCE VECTOR UNCHANGED  
 = 1 NULL THE HUB FORCE VECTOR IN THE CODE

## 3 IDPFOR DISPLAY HUB FORCE FLAG

= 0 DISPLAY HUB DISPLACEMENTS AND SAVE DISPLACEMENTS FOR PLOTTING  
 = 1 DISPLAY HUB INTERFACE FORCES AND MOMENTS AND SAVE FOR PLOT ROUTINE  
 (ABOVE FLAG IS SET TO ZERO INTERNALLY FOR ACCELERATIONS OUTPUT)

## 4 NCN ROTOR HUB CONNECTION NODE NUMBER

## 5 THETA EULER PITCH ANGLE - ROTATE SECOND ABOUT THE Y-AXIS (DEGREES)

## 6 PHI EULER ROLL ANGLE - ROTATE THIRD ABOUT THE X-AXIS (DEGREES)

## 7 XSI EULER YAW ANGLE - ROTATE FIRST ABOUT THE Z-AXIS (DEGREES)

## 8 IHHC HHC FLAG

= 0 HHC NOT ACTIVE  
 = 1 HHC ACTIVE

## 9 ITHHC READ THETA FOR HHC FLAG

= 0 COMPUTE OPTIMAL THETA BY QUADRATIC MINIMIZATION  
 = 1 READ HHC INPUT ANGLES - LOCATIONS 11 TO 16 BELOW

## 10 ISTRSS DISPLAY BLADE STRESSES FLAG - SET INTERNALLY FROM G400 INPUT LOCATION 993

= 0 DO NOT DISPLAY STRESSES - G400 LOCATION 993 IS ZERO  
 = 1 DISPLAY STRESSES - G400 LOCATION 993 IS GREATER THAN ZERO

## 11 THM1C HHC INPUT ANGLE - (N-1)TH COSINE COMPONENT (DEGREES). N = NUMBER OF BLADES

## 12 THM1S HHC INPUT ANGLE - (N-1)TH SINE COMPONENT (DEGREES). N = NUMBER OF BLADES

## 13 THNC HHC INPUT ANGLE - ( N )TH COSINE COMPONENT (DEGREES). N = NUMBER OF BLADES

## 14 THNS HHC INPUT ANGLE - ( N )TH SINE COMPONENT (DEGREES). N = NUMBER OF BLADES

## 15 THNP1C HHC INPUT ANGLE - (N+1)TH COSINE COMPONENT (DEGREES). N = NUMBER OF BLADES

## 16 THNP1S HHC INPUT ANGLE - (N+1)TH SINE COMPONENT (DEGREES). N = NUMBER OF BLADES

## 17 WTHNM1 WEIGHT FOR (N-1)TH COMPONENT OF HHC INPUT ANGLES. N = NUMBER OF BLADES

## 18 WTHN WEIGHT FOR ( N )TH COMPONENT OF HHC INPUT ANGLES. N = NUMBER OF BLADES

## 19 WTHNP1 WEIGHT FOR (N+1)TH COMPONENT OF HHC INPUT ANGLES. N = NUMBER OF BLADES

## SUMMARY OF ROTOR HUB 4/REV LOADS AND HUB IMPEDANCE MATRIX CALCULATIONS FOR 4/REV VIBRATORY HUB ACCELERATIONS

UNITS... U(SHEAR) = LBS, U(MOMENT) = FT-LBS, U(LINEAR ACCELERATION) = FT/SEC2, U(ROTATIONAL ACCELERATION) = RAD/SEC2

## CONVENTIONAL FOURIER SERIES REPRESENTATIONS

142

			HUB LOADS	VXPC	VYPC	VZPC	WXPC	WYPC	WZPC
LONG.	SHR (+, AFT)	COS	200.2	-.7388D+05	.4761D+05	-1159.	-.3640D+05	-7113.	-7990.
LAT.	SHR (+, STRBD)	COS	2.373	-.4872D+05	-.6406D+05	-2092.	.2115D+05	-9757.	.4468D+05
VERT.	SHR (+, UP)	COS	1.144	-.1814D+05	.1331D+05	-.2183D+05	.1192D+05	-3774.	2450.
ROLL	MOMT (+, STRBD UP)	COS	36.69	-5297.	-7481.	3837.	.2389D+05	-2835.	-.2319D+05
PITCH	MOMT (+, NOSE UP)	COS	247.9	1798.	4008.	3211.	-.1189D+05	.2830D+05	.2380D+05
YAW	MOMT (+, OMEGA DIR.)	COS	123.6	-.7323D+05	-.1612D+06	-564.8	5860.	-.3953D+05	-.2719D+05
LONG.	SHR (+, AFT)	SIN	-90.68	-.5267D+05	.1200D+05	1974.	.3427D+05	6160.	.2895D+05
LAT.	SHR (+, STRBD)	SIN	10.26	-730.9	-.4500D+05	2332.	7754.	.1210D+05	-6484.
VERT.	SHR (+, UP)	SIN	-76.03	-.1041D+05	-.1353D+05	-.2413D+05	2607.	3170.	.1954D+05
ROLL	MOMT (+, STRBD UP)	SIN	-174.6	.2072D+05	-.2277D+05	-5340.	-4584.	-.1504D+05	.1843D+05
PITCH	MOMT (+, NOSE UP)	SIN	112.3	-2842.	.1185D+05	1050.	.1240D+05	-5042.	-2697.
YAW	MOMT (+, OMEGA DIR.)	SIN	-17.10	.1537D+06	-.4981D+05	.3551D+05	9127.	.1980D+06	-.6794D+06
				VXPS	VYPS	VZPS	WXPS	WYPS	WZPS
LONG.	SHR (+, AFT)	COS		.5097D+05	5162.	-1280.	-.3145D+05	-.2262D+05	-7872.
LAT.	SHR (+, STRBD)	COS		5685.	.3954D+05	-1485.	.2074D+05	-.1862D+05	8142.
VERT.	SHR (+, UP)	COS		.1098D+05	9765.	.2395D+05	-1068.	-3433.	-.2186D+05
ROLL	MOMT (+, STRBD UP)	COS		-.1678D+05	4603.	4839.	-3193.	.1415D+05	-7586.
PITCH	MOMT (+, NOSE UP)	COS		-3666.	1584.	-1096.	-.1393D+05	-4855.	.2248D+05
YAW	MOMT (+, OMEGA DIR.)	COS		-.1856D+06	.4305D+05	-.2533D+05	-.3573D+05	-.2671D+06	.7577D+06
LONG.	SHR (+, AFT)	SIN		-.6480D+05	.4575D+05	1763.	-1854.	.3050D+05	.1918D+05
LAT.	SHR (+, STRBD)	SIN		-.4658D+05	-.7567D+05	-2801.	7650.	-.1028D+05	.5211D+05
VERT.	SHR (+, UP)	SIN		-.2001D+05	8220.	-.2211D+05	.1141D+05	-4310.	1508.
ROLL	MOMT (+, STRBD UP)	SIN		-5064.	-.2089D+05	2782.	.2403D+05	-2737.	-.3928D+05
PITCH	MOMT (+, NOSE UP)	SIN		5394.	313.0	4402.	-656.5	.3929D+05	.3820D+05
YAW	MOMT (+, OMEGA DIR.)	SIN		-.7980D+05	-.1122D+06	5994.	.1600D+06	.1735D+06	.1215D+06

## NUMBER

## OUTPUT COORDINATES

## VALUE

1	ELEMENT	1	MS1	MODE	AMPLITUD	1.1441D-03
2	ELEMENT	1	MS1	MODE	PHASE	1.3677D+02
3	ELEMENT	2	MS1	MODE	AMPLITUD	6.7805D-06
4	ELEMENT	2	MS1	MODE	PHASE	-5.4071D+01
5	ELEMENT	3	MS1	MODE	AMPLITUD	4.5452D-05
6	ELEMENT	3	MS1	MODE	PHASE	-4.9433D+01
7	ELEMENT	4	MS1	MODE	AMPLITUD	1.0963D-05
8	ELEMENT	4	MS1	MODE	PHASE	1.3604D+02
9	ELEMENT	7	RE3	RX	AMPLITUD	1.2840D+02
10	ELEMENT	7	RE3	RX	PHASE	-4.0249D+01
11	ELEMENT	7	RE3	RY	AMPLITUD	5.9823D+01
12	ELEMENT	7	RE3	RY	PHASE	1.3256D+02
13	ELEMENT	7	RE3	RZ	AMPLITUD	6.9290D+01
14	ELEMENT	7	RE3	RZ	PHASE	-1.0139D+02
15	ELEMENT	7	RE3	RMX	AMPLITUD	1.5865D+02
16	ELEMENT	7	RE3	RMX	PHASE	-7.3218D+01
17	ELEMENT	7	RE3	RMX	AMPLITUD	2.7287D+02
18	ELEMENT	7	RE3	RMX	PHASE	2.2888D+01
19	ELEMENT	7	RE3	RMZ	AMPLITUD	2.6522D+02
20	ELEMENT	7	RE3	RMZ	PHASE	3.8643D+01
21	ELEMENT	9	GF1	X	AMPLITUD	1.1437D-03
22	ELEMENT	9	GF1	X	PHASE	1.3677D+02
23	ELEMENT	9	GF1	Y	AMPLITUD	3.0056D-05
24	ELEMENT	9	GF1	Y	PHASE	-5.4834D+01
25	ELEMENT	9	GF1	Z	AMPLITUD	2.7500D-04
26	ELEMENT	9	GF1	Z	PHASE	-4.3244D+01
27	ELEMENT	9	GF1	THTX	AMPLITUD	0.0
28	ELEMENT	9	GF1	THTX	PHASE	0.0
29	ELEMENT	9	GF1	THTY	AMPLITUD	0.0
30	ELEMENT	9	GF1	THTY	PHASE	0.0
31	ELEMENT	9	GF1	THTZ	AMPLITUD	0.0
32	ELEMENT	9	GF1	THTZ	PHASE	0.0

## \*\*\*\*\* STATISTICS \*\*\*\*\*

PRESENT SIZE OF WORKING STORAGE (MAXSIZ) IS 1747 WORDS.

# INPUT DECK CARD IMAGE LISTING

\*\*\*\*\*

144

RE3	7	0	/* ROTOR ELASTIC TYPE 3	*/ 0077000
-3 /	0.0	0.0	/* DISPLAY HUB DISPLACEMENTS	*/ 0078000
FR1	8	0	/* INPUT FORCING FREQUENCY	*/ 0080000
-3 /	1.000D+00	0.0	/* GET AMPLITUDES IN G'S	*/ 0081000
GEN	11	0	/* GENERAL ELEMENT	*/ 0081201
-2 /	0.0	0.0	/* SUPPRESS INPUT LISTS	*/ 0081401

STOP



NUMBER	OUTPUT COORDINATES				VALUE	
1	ELEMENT	1	MS1	MODE	AMPLITUD	5.34490-01
2	ELEMENT	1	MS1	MODE	PHASE	1.36770+02
3	ELEMENT	2	MS1	MODE	AMPLITUD	3.16760-03
4	ELEMENT	2	MS1	MODE	PHASE	-5.40710+01
5	ELEMENT	3	MS1	MODE	AMPLITUD	2.12330-02
6	ELEMENT	3	MS1	MODE	PHASE	-4.94330+01
7	ELEMENT	4	MS1	MODE	AMPLITUD	5.12160-03
8	ELEMENT	4	MS1	MODE	PHASE	1.36040+02
9	ELEMENT	7	RE3	X	AMPLITUD	5.34300-01
10	ELEMENT	7	RE3	X	PHASE	1.36770+02
11	ELEMENT	7	RE3	Y	AMPLITUD	1.40410-02
12	ELEMENT	7	RE3	Y	PHASE	-5.48340+01
13	ELEMENT	7	RE3	Z	AMPLITUD	1.28470-01
14	ELEMENT	7	RE3	Z	PHASE	-4.32440+01
15	ELEMENT	7	RE3	WX	AMPLITUD	0.0
16	ELEMENT	7	RE3	WX	PHASE	0.0
17	ELEMENT	7	RE3	WY	AMPLITUD	0.0
18	ELEMENT	7	RE3	WY	PHASE	0.0
19	ELEMENT	7	RE3	WZ	AMPLITUD	0.0
20	ELEMENT	7	RE3	WZ	PHASE	0.0
21	ELEMENT	9	GF1	X	AMPLITUD	5.34300-01
22	ELEMENT	9	GF1	X	PHASE	1.36770+02
23	ELEMENT	9	GF1	Y	AMPLITUD	1.40410-02
24	ELEMENT	9	GF1	Y	PHASE	-5.48340+01
25	ELEMENT	9	GF1	Z	AMPLITUD	1.28470-01
26	ELEMENT	9	GF1	Z	PHASE	-4.32440+01
27	ELEMENT	9	GF1	THTX	AMPLITUD	0.0
28	ELEMENT	9	GF1	THTX	PHASE	0.0
29	ELEMENT	9	GF1	THTY	AMPLITUD	0.0
30	ELEMENT	9	GF1	THTY	PHASE	0.0
31	ELEMENT	9	GF1	THTZ	AMPLITUD	0.0
32	ELEMENT	9	GF1	THTZ	PHASE	0.0

\*\*\*\*\* STATISTICS \*\*\*\*\*

FINAL SIZE OF WORKING STORAGE (MAXSIZ) IS 1985 WORDS.

SIMVIB CHECK CASE 13 FOR CDC COMPUTER  
6400 IMPEDANCE - RESULTS IN G'S & LBS  
4 FUSELAGE MODES AND 6 ROTOR D.O.F.  
3RD MODE FREQ

146

10.1	32.1	0.0
1.1	1MS1 MODEAMPLITUD	
2.1	1MS1 MODEPHASE	
3.1	2MS1 MODEAMPLITUD	
4.1	2MS1 MODEPHASE	
5.1	3MS1 MODEAMPLITUD	
6.1	3MS1 MODEPHASE	
7.1	4MS1 MODEAMPLITUD	
8.1	4MS1 MODEPHASE	
9.1	7RE3 RX AMPLITUD	
10.1	7RE3 RX PHASE	
11.1	7RE3 RY AMPLITUD	
12.1	7RE3 RY PHASE	
13.1	7RE3 RZ AMPLITUD	
14.1	7RE3 RZ PHASE	
15.1	7RE3 RMX AMPLITUD	
16.1	7RE3 RMX PHASE	
17.1	7RE3 RMY AMPLITUD	
18.1	7RE3 RMY PHASE	
19.1	7RE3 RMZ AMPLITUD	
20.1	7RE3 RMZ PHASE	
21.1	9GF1 X AMPLITUD	
22.1	9GF1 X PHASE	
23.1	9GF1 Y AMPLITUD	
24.1	9GF1 Y PHASE	
25.1	9GF1 Z AMPLITUD	
26.1	9GF1 Z PHASE	
27.1	9GF1 THTXAMPLITUD	
28.1	9GF1 THTXPHASE	
29.1	9GF1 THTYAMPLITUD	
30.1	9GF1 THTYPHASE	
31.1	9GF1 THTZAMPLITUD	
32.1	9GF1 THTZPHASE	

NOTE : DATA WRITTEN TO UNIT 2 FOR PLOTTING -  
(SEE REF1, FIGURE 48) - FREQUENCY = 10 TO 30 HZ

CASE 1 - RESULTS IN LBS - FIGURE 48(a)

1.1	1.0000D+01			
1.1441D-03	1.3677D+02	6.7805D-06	-5.4071D+01	4.5452D-05
-4.9433D+01	1.0963D-05	1.3604D+02	1.2840D+02	-4.0249D+01
5.9823D+01	1.3256D+02	6.9290D+01	-1.0139D+02	1.5865D+02
-7.3218D+01	2.7287D+02	2.2888D+01	2.6522D+02	3.8643D+01
1.1437D-03	1.3677D+02	3.0056D-05	-5.4834D+01	2.7500D-04
-4.3244D+01	0.0	0.0	0.0	0.0
0.0	0.0			
2.1	1.2222D+01			
1.1427D-03	1.3682D+02	6.6922D-06	-5.4248D+01	5.4367D-05
-5.0760D+01	1.0821D-05	1.3586D+02	1.2822D+02	-4.0202D+01
5.9064D+01	1.3238D+02	6.9182D+01	-1.0138D+02	1.5872D+02
-7.3210D+01	2.7284D+02	2.2880D+01	2.6536D+02	3.8393D+01
1.1422D-03	1.3682D+02	3.9099D-05	-5.5397D+01	2.7474D-04
-4.3200D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0000D-79			
3.1	1.4444D+01			
1.1401D-03	1.3692D+02	6.5238D-06	-5.4507D+01	7.1012D-05
-5.3087D+01	1.0548D-05	1.3560D+02	1.2789D+02	-4.0102D+01
5.7617D+01	1.3213D+02	6.8988D+01	-1.0136D+02	1.5889D+02
-7.3200D+01	2.7279D+02	2.2867D+01	2.6548D+02	3.7933D+01
1.1395D-03	1.3693D+02	5.6003D-05	-5.6912D+01	2.7428D-04
-4.3108D+01	0.0	0.0	0.0000D-79	0.0000D-79

0.00000-79	0.00000-79			
4.1	1.66670+01			
1.13480-03	1.37220+02	6.11540-06	-5.46720+01	1.09730-04
-5.83530+01	9.88790-06	1.35440+02	1.27200+02	-3.98030+01
5.41070+01	1.31950+02	6.85740+01	-1.01240+02	1.59380+02
-7.32030+01	2.72710+02	2.28440+01	2.65000+02	3.69070+01
1.13370-03	1.37240+02	9.54280-05	-6.13630+01	2.73360-04
-4.28420+01	0.0	0.0	0.00000-79	0.00000-79

0.00000-79	0.00000-79			
5.1	1.88890+01			
1.12700-03	1.39220+02	4.52650-06	-4.52270+01	2.60060-04
-8.05870+01	7.31880-06	1.44880+02	1.26010+02	-3.77760+01
4.04000+01	1.40960+02	6.77820+01	-9.98570+01	1.62710+02
-7.36020+01	2.73040+02	2.28900+01	2.51210+02	3.38800+01
1.12500-03	1.39310+02	2.50150-04	-8.28360+01	2.72450-04
-4.11280+01	0.0	0.0	0.00000-79	0.00000-79

0.00000-79	0.00000-79			
6.1	2.11110+01			
1.19740-03	1.37860+02	8.43170-06	-3.82020+01	2.29680-04
1.69750+02	1.36330-05	1.51900+02	1.34790+02	-3.90740+01
7.39130+01	1.48150+02	7.30210+01	-9.93880+01	1.60860+02
-7.42890+01	2.74930+02	2.33330+01	2.35660+02	4.65870+01
1.19940-03	1.37920+02	2.45470-04	1.68220+02	2.85380-04
-4.23910+01	0.0	0.0	0.00000-79	0.00000-79

0.00000-79	0.00000-79			
7.1	2.33330+01			
1.16970-03	1.36660+02	7.89050-06	-4.85160+01	8.97930-05
1.48000+02	1.27580-05	1.41590+02	1.31540+02	-4.03180+01
6.93400+01	1.38030+02	7.11310+01	-1.00900+02	1.58580+02
-7.35630+01	2.73660+02	2.30670+01	2.56540+02	4.26560+01
1.17060-03	1.36670+02	1.06390-04	1.47210+02	2.79800-04
-4.33750+01	0.0	0.0	0.00000-79	0.00000-79

0.00000-79	0.00000-79			
8.1	2.55560+01			
1.16220-03	1.36580+02	7.63150-06	-5.04960+01	5.25730-05
1.42810+02	1.23390-05	1.39610+02	1.30630+02	-4.04170+01
6.71240+01	1.36080+02	7.06000+01	-1.01130+02	1.58390+02
-7.34290+01	2.73390+02	2.30080+01	2.60070+02	4.15270+01
1.16280-03	1.36580+02	6.90190-05	1.42650+02	2.78350-04
-4.34380+01	0.0	0.0	0.00000-79	0.00000-79

0.00000-79	0.00000-79			
9.1	2.77780+01			
1.15890-03	1.36570+02	7.50460-06	-5.12680+01	3.61030-05
1.40520+02	1.21340-05	1.38840+02	1.30230+02	-4.04320+01
6.60360+01	1.35320+02	7.03680+01	-1.01210+02	1.58360+02
-7.33790+01	2.73280+02	2.29840+01	2.61360+02	4.10300+01
1.15930-03	1.36570+02	5.24480-05	1.40930+02	2.77740-04
-4.34410+01	0.0	0.0	0.00000-79	0.00000-79

0.00000-79	0.00000-79			
10.1	3.00000+01			
1.15720-03	1.36570+02	7.43080-06	-5.16690+01	2.69350-05
1.39230+02	1.20150-05	1.38440+02	1.30020+02	-4.04320+01
6.54040+01	1.34920+02	7.02410+01	-1.01250+02	1.58360+02
-7.33540+01	2.73230+02	2.29710+01	2.62000+02	4.07550+01
1.15750-03	1.36570+02	4.32170-05	1.40160+02	2.77400-04
-4.34360+01	0.0	0.0	0.00000-79	0.00000-79

147  
SIMVIB CHECK CASE 13 FOR CDC COMPUTER  
6400 IMPEDANCE - RESULTS IN G'S & LBS  
4 FUSELAGE MODES AND 6 ROTOR D.O.F.

END OF CASE 1

CASE 2. RESULTS IN G'S - FIGURE 48(b)

IBM Z30587

## 3RD MODE FREQ

148

10.1	32.1	0.0		
1.1	1MS1	MODEAMPLITUD		
2.1	1MS1	MODEPHASE		
3.1	2MS1	MODEAMPLITUD		
4.1	2MS1	MODEPHASE		
5.1	3MS1	MODEAMPLITUD		
6.1	3MS1	MODEPHASE		
7.1	4MS1	MODEAMPLITUD		
8.1	4MS1	MODEPHASE		
9.1	7RE3 X	AMPLITUD		
10.1	7RE3 X	PHASE		
11.1	7RE3 Y	AMPLITUD		
12.1	7RE3 Y	PHASE		
13.1	7RE3 Z	AMPLITUD		
14.1	7RE3 Z	PHASE		
15.1	7RE3 WX	AMPLITUD		
16.1	7RE3 WX	PHASE		
17.1	7RE3 WY	AMPLITUD		
18.1	7RE3 WY	PHASE		
19.1	7RE3 WZ	AMPLITUD		
20.1	7RE3 WZ	PHASE		
21.1	9GF1 X	AMPLITUD		
22.1	9GF1 X	PHASE		
23.1	9GF1 Y	AMPLITUD		
24.1	9GF1 Y	PHASE		
25.1	9GF1 Z	AMPLITUD		
26.1	9GF1 Z	PHASE		
27.1	9GF1	THTXAMPLITUD		
28.1	9GF1	THTXPHASE		
29.1	9GF1	THTYAMPLITUD		
30.1	9GF1	THTYPHASE		
31.1	9GF1	THTZAMPLITUD		
32.1	9GF1	THTZPHASE		
1.1	1.00000D+01			
5.3449D-01	1.3677D+02	3.1676D-03	-5.4071D+01	2.1233D-02
-4.9433D+01	5.1216D-03	1.3604D+02	5.3430D-01	1.3677D+02
1.4041D-02	-5.4834D+01	1.2847D-01	-4.3244D+01	0.0
0.0	0.0	0.0	0.0	0.0
5.3430D-01	1.3677D+02	1.4041D-02	-5.4834D+01	1.2847D-01
-4.3244D+01	0.0	0.0	0.0	0.0
0.0	0.0			
2.1	1.2222D+01			
5.3382D-01	1.3682D+02	3.1263D-03	-5.4248D+01	2.5398D-02
-5.0760D+01	5.0549D-03	1.3586D+02	5.3359D-01	1.3682D+02
1.8265D-02	-5.5397D+01	1.2835D-01	-4.3200D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.3359D-01	1.3682D+02	1.8265D-02	-5.5397D+01	1.2835D-01
-4.3200D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
3.1	1.4444D+01			
5.3261D-01	1.3692D+02	3.0476D-03	-5.4507D+01	3.3174D-02
-5.3087D+01	4.9277D-03	1.3560D+02	5.3231D-01	1.3693D+02
2.6162D-02	-5.6912D+01	1.2813D-01	-4.3108D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.3231D-01	1.3693D+02	2.6162D-02	-5.6912D+01	1.2813D-01
-4.3108D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
4.1	1.6667D+01			
5.3011D-01	1.3722D+02	2.8568D-03	-5.4672D+01	5.1260D-02

-5.8353D+01	4.6192D-03	1.3544D+02	5.2964D-01	1.3724D+02
4.4580D-02	-6.1363D+01	1.2770D-01	-4.2842D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.2964D-01	1.3724D+02	4.4580D-02	-6.1363D+01	1.2770D-01
-4.2842D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
5.1	1.8889D+01			
5.2648D-01	1.3922D+02	2.1146D-03	-4.5227D+01	1.2149D-01
-8.0587D+01	3.4190D-03	1.4488D+02	5.2556D-01	1.3931D+02
1.1686D-01	-8.2836D+01	1.2728D-01	-4.1128D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.2556D-01	1.3931D+02	1.1686D-01	-8.2836D+01	1.2728D-01
-4.1128D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
6.1	2.1111D+01			
5.5938D-01	1.3786D+02	3.9389D-03	-3.8202D+01	1.0730D-01
1.6975D+02	6.3688D-03	1.5190D+02	5.6031D-01	1.3792D+02
1.1467D-01	1.6822D+02	1.3332D-01	-4.2391D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.6031D-01	1.3792D+02	1.1467D-01	1.6822D+02	1.3332D-01
-4.2391D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
7.1	2.3333D+01			
5.4643D-01	1.3666D+02	3.6861D-03	-4.8516D+01	4.1948D-02
1.4800D+02	5.9600D-03	1.4159D+02	5.4687D-01	1.3667D+02
4.9699D-02	1.4721D+02	1.3071D-01	-4.3375D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.4687D-01	1.3667D+02	4.9699D-02	1.4721D+02	1.3071D-01
-4.3375D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
8.1	2.5556D+01			
5.4292D-01	1.3658D+02	3.5651D-03	-5.0496D+01	2.4560D-02
1.4281D+02	5.7644D-03	1.3961D+02	5.4319D-01	1.3658D+02
3.2243D-02	1.4265D+02	1.3004D-01	-4.3438D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.4319D-01	1.3658D+02	3.2243D-02	1.4265D+02	1.3004D-01
-4.3438D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
9.1	2.7778D+01			
5.4141D-01	1.3657D+02	3.5058D-03	-5.1268D+01	1.6866D-02
1.4052D+02	5.6685D-03	1.3884D+02	5.4160D-01	1.3657D+02
2.4502D-02	1.4093D+02	1.2975D-01	-4.3441D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.4160D-01	1.3657D+02	2.4502D-02	1.4093D+02	1.2975D-01
-4.3441D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			
10.1	3.0000D+01			
5.4058D-01	1.3657D+02	3.4714D-03	-5.1669D+01	1.2583D-02
1.3923D+02	5.6128D-03	1.3844D+02	5.4073D-01	1.3657D+02
2.0189D-02	1.4016D+02	1.2959D-01	-4.3436D+01	0.0000D-79
0.0	0.0	0.0	0.0000D-79	0.0000D-79
5.4073D-01	1.3657D+02	2.0189D-02	1.4016D+02	1.2959D-01
-4.3436D+01	0.0	0.0	0.0000D-79	0.0000D-79
0.0000D-79	0.0			

# APPENDIX F. G400/F389 SAMPLE INPUT

PAGE: 01 OF 14

START COL	1	2	3	4	5	6	7	8
2	1							
3	-4-4-4							
1	10	.22730	.1300	AIRFOIL	CL DATA			
1	62	30.00	.2000	-180.00	.0000	-172.00	.7800	-160.00
4		-30.00	-1.0000	-14.00	-1.6800	-10.00	-1.2460	-6.00
5		-2.00	-.0830	.00	.1270	2.00	.3400	4.00
6		8.00	1.0110	10.00	1.2460	12.00	1.4630	14.00
5		18.00	1.7200	20.00	1.5200	30.00	1.0000	45.00
4		150.00	-.9500	156.00	-.7000	158.00	-.6600	160.00
4		180.00	.0000					
1	38	18.00	.3000	-30.00	-1.0000	-14.00	-1.7100	-10.00
5		-4.00	-.3200	-2.00	-.0890	.00	.1340	2.00
6		6.00	.8110	8.00	1.0530	10.00	1.2990	12.00
5		16.00	1.7600	18.00	1.6700	20.00	1.4500	30.00
1	32	15.00	.4000	-30.00	-1.0000	-14.00	-1.1500	-10.00
5		-4.00	-.3410	-2.00	-.0960	.00	.1380	2.00
6		6.00	.8560	8.00	1.1150	10.00	1.2500	12.00
5		30.00	1.0000					
1	26	12.00	.5000	-30.00	-1.0000	-10.00	-.8400	-6.00
5		-2.00	-.1040	.00	.1470	2.00	.4000	4.00
6		8.00	.9500	10.00	.8400	30.00	1.0000	
1	26	12.00	.6000	-30.00	-1.0000	-10.00	-.5900	-6.00
5		-2.00	-.1260	.00	.1610	2.00	.4410	4.00
6		8.00	.6700	10.00	.5900	30.00	1.0000	
1	50	24.00	.7000	-30.00	-1.0000	-17.25	-.8000	-16.25
4		-12.25	-.8100	-11.25	-.8000	-10.25	-.7900	-9.25
5		-6.25	-.7000	-4.25	-.5000	-1.12	-.0000	.00
6		4.00	.7000	6.00	.7650	7.00	.7820	8.00
5		10.00	.8100	12.00	.8010	14.00	.7980	15.00
1	42	20.00	.7500	-30.00	-1.0000	-16.26	-.7520	-15.26
4		-11.36	-.7400	-8.00	-.7050	-6.00	-.6350	-5.00
5		-1.20	-.0000	.00	.2200	2.00	.4900	4.00
6		8.00	.7310	10.00	.7580	11.00	.7600	12.00
5		30.00	1.0000					
1	46	22.00	.8000	-30.00	-1.0000	-19.30	-.7300	-18.13
5		-8.00	-.6700	-6.00	-.6010	-5.00	-.5400	-4.00
5		-2.00	-.1750	-1.00	.0000	.00	.1800	2.00
6		6.00	.6200	8.00	.6700	10.00	.6900	11.00
5		15.00	.6900	16.00	.7000	30.00	1.0000	
1	42	20.00	.9000	-30.00	-1.0000	-14.36	-.6400	-13.06
5		-9.36	-.5880	-7.36	-.5500	-5.36	-.5000	-3.36
7		.00	-.0250	.22	.0000	2.00	.1800	4.00
6		8.00	.5500	10.00	.5880	12.00	.6090	13.50
5		30.00	1.0000					
1	42	20.00	.9500	-30.00	-1.0000	-14.36	-.6400	-13.06
5		-9.36	-.5880	-7.36	-.5500	-5.36	-.5000	-3.36
7		.00	-.0250	.22	.0000	2.00	.1800	4.00
6		8.00	.5500	10.00	.5880	12.00	.6090	13.50
5		30.00	1.0000					
1	10	.4545		SC1095R8	AIRFOIL	CL DATA		
1	54	26.00	.3000	-180.00	.0000	-172.00	.7800	-160.00
4		-30.00	-1.0000	-10.00	-.8000	-7.50	-.7300	-6.70
6		5.00	.7400	10.00	1.3000	11.00	1.3800	12.00
5		14.00	1.5300	15.20	1.2100	19.00	1.0800	30.00

START

COL -----1-----2-----3-----4-----5-----6-----7-----8-----

4	149.90	-.9500	150.00	-.9500	156.00	-.7000	158.00	-.6600	160.00	-.6400
4	172.00	-.7800	180.00	.0000						
1 28	13.00	.4000	-30.00	-1.0000	-10.00	-.7400	-8.60	-.7100	-7.00	-.6400
5	-5.00	-.4500	7.00	1.0400	8.00	1.1500	9.00	1.2200	10.00	1.2700
5	11.20	1.2900	12.00	1.1300	18.00	1.1200	30.00	1.0000		
1 30	14.00	.5000	-30.00	-1.0000	-10.00	-.6000	-8.50	-.6600	-7.00	-.6500
5	-5.00	-.4700	6.00	.9300	7.00	1.0000	8.00	1.0400	9.00	1.0600
5	10.00	1.0800	11.00	1.0900	12.00	1.1100	16.00	1.1100	30.00	1.0000
1 38	18.00	.6000	-30.00	-1.0000	-10.00	-.6000	-7.00	-.6000	-6.00	-.5800
5	-5.00	-.5000	-4.00	-.3600	-3.00	-.2400	-2.00	-.1200	-1.00	-.0200
7	.00	.1400	3.00	.6100	4.00	.7500	5.00	.8400	6.00	.9000
6	7.00	.9200	14.00	1.0400	15.00	1.0700	30.00	1.0000		
1 32	15.00	.7000	-30.00	-1.0000	-10.00	-.6000	-7.00	-.6000	-5.80	-.5900
5	-5.00	-.5500	-4.00	-.4400	-3.00	-.3100	-2.00	-.1700	2.00	.5700
6	3.00	.7100	4.00	.8100	5.00	.8500	9.40	.9200	15.00	.9800
5	30.00	1.0000								
1 32	15.00	.7500	-30.00	-1.0000	-10.00	-.7000	-6.50	-.7000	-5.70	-.6900
5	-5.00	-.6500	-4.00	-.5400	-3.00	-.3800	-2.00	-.2000	1.40	.5500
6	2.00	.6300	3.00	.7000	4.00	.7400	7.00	.8300	15.00	.9500
5	30.00	1.0000								
1 30	14.00	.8000	-30.00	-.9500	-14.00	-.8000	-12.00	-.7900	-10.00	-.8100
5	-6.00	-.6900	-2.00	-.2500	.00	.0700	2.00	.3500	4.00	.5600
6	6.00	.7050	8.00	.8050	9.00	.8400	15.00	.8500	30.00	1.0000
1 30	14.00	.8500	-30.00	-.9500	-16.00	-.8030	-13.00	-.7720	-10.00	-.7400
5	-6.00	-.6800	-2.00	-.2900	.00	-.0450	2.00	.2300	4.00	.4600
6	6.00	.6400	8.00	.7600	9.00	.8020	15.00	.8500	30.00	1.0000
1 30	14.00	.9000	-30.00	-.9500	-16.00	-.7540	-13.00	-.7120	-10.00	-.6700
5	-6.00	-.6630	-2.00	-.3100	.00	-.1500	1.00	.0000	2.00	.1380
6	4.00	.3900	6.00	.6400	8.00	.7650	10.00	.8100	30.00	1.0000
1 28	13.00	.9500	-30.00	-.9500	-16.00	-.7410	-13.00	-.6960	-10.00	-.6510
5	-6.00	-.6410	-2.00	-.2700	.00	-.0900	2.00	.1800	4.00	.4350
6	6.00	.6800	8.00	.7950	10.00	.8100	30.00	1.0000		
1 10	.8143	SC1095R8 AIRFOIL CL DATA								
1 54	26.00	.3000	-180.00	.0000	-172.00	.7800	-160.00	.6400	-158.00	.6600
4	-30.00	-1.0000	-10.00	-.8000	-7.50	-.7300	-6.70	-.6000	-5.00	-.4400
6	5.00	.7400	10.00	1.3000	11.00	1.3800	12.00	1.4400	13.00	1.4900
5	14.00	1.5300	15.20	1.2100	19.00	1.0800	30.00	1.0000	30.10	1.0000
4	149.90	-.9500	150.00	-.9500	156.00	-.7000	158.00	-.6600	160.00	-.6400
4	172.00	-.7800	180.00	.0000						
1 28	13.00	.4000	-30.00	-1.0000	-10.00	-.7400	-8.60	-.7100	-7.00	-.6400
5	-5.00	-.4500	7.00	1.0400	8.00	1.1500	9.00	1.2200	10.00	1.2700
5	11.20	1.2900	12.00	1.1300	18.00	1.1200	30.00	1.0000		
1 30	14.00	.5000	-30.00	-1.0000	-10.00	-.6000	-8.50	-.6600	-7.00	-.6500
5	-5.00	-.4700	6.00	.9300	7.00	1.0000	8.00	1.0400	9.00	1.0600
5	10.00	1.0800	11.00	1.0900	12.00	1.1100	16.00	1.1100	30.00	1.0000
1 38	18.00	.6000	-30.00	-1.0000	-10.00	-.6000	-7.00	-.6000	-6.00	-.5800
5	-5.00	-.5000	-4.00	-.3600	-3.00	-.2400	-2.00	-.1200	-1.00	-.0200
7	.00	.1400	3.00	.6100	4.00	.7500	5.00	.8400	6.00	.9000
6	7.00	.9200	14.00	1.0400	15.00	1.0700	30.00	1.0000		
1 32	15.00	.7000	-30.00	-1.0000	-10.00	-.6000	-7.00	-.6000	-5.80	-.5900
5	-5.00	-.5500	-4.00	-.4400	-3.00	-.3100	-2.00	-.1700	2.00	.5700
6	3.00	.7100	4.00	.8100	5.00	.8500	9.40	.9200	15.00	.9800
5	30.00	1.0000								
1 32	15.00	.7500	-30.00	-1.0000	-10.00	-.7000	-6.50	-.7000	-5.70	-.6900

START											
COL	1	2	3	4	5	6	7	8	9	10	11
5	-5.00	-.6500	-4.00	-.5400	-3.00	-.3800	-2.00	-.2000	1.40	.5500	
6	2.00	.6300	3.00	.7000	4.00	.7400	7.00	.8300	15.00	.9500	
5	30.00	1.0000									
1 30	14.00	.8000	-30.00	-.9500	-14.00	-.8000	-12.00	-.7900	-10.00	-.8100	
5	-6.00	-.6900	-2.00	-.2500	.00	.0700	2.00	.3500	4.00	.5600	
6	6.00	.7050	8.00	.8050	9.00	.8400	15.00	.8500	30.00	1.0000	
1 30	14.00	.8500	-30.00	-.9500	-16.00	-.8030	-13.00	-.7720	-10.00	-.7400	
5	-6.00	-.6800	-2.00	-.2900	.00	-.0450	2.00	.2300	4.00	.4600	
6	6.00	.6400	8.00	.7600	9.00	.8020	15.00	.8500	30.00	1.0000	
1 30	14.00	.9000	-30.00	-.9500	-16.00	-.7540	-13.00	-.7120	-10.00	-.6700	
5	-6.00	-.6630	-2.00	-.3100	.00	-.1500	1.00	.0000	2.00	.1380	
6	4.00	.3900	6.00	.6400	8.00	.7650	10.00	.8100	30.00	1.0000	
1 28	13.00	.9500	-30.00	-.9500	-16.00	-.7410	-13.00	-.6960	-10.00	-.6510	
5	-6.00	-.6410	-2.00	-.2700	.00	-.0900	2.00	.1800	4.00	.4350	
6	6.00	.6800	8.00	.7950	10.00	.8100	30.00	1.0000			
1 10	.8144	SC1095 AIRFOIL CL DATA									
1 48	23.00	.3000	-180.00	.0000	-172.00	.7800	-160.00	.6400	-150.00	.9500	
4	-30.00	-1.0000	-10.00	-.8800	-8.00	-.7600	-6.00	-.6000	-5.00	-.5000	
5	-3.00	-.3000	9.40	1.1100	10.30	1.1800	11.00	1.2100	11.80	1.2100	
5	12.60	1.1700	16.00	.9500	30.00	1.0000	150.00	-.9500	156.00	-.7000	
4	158.00	-.6600	160.00	-.6400	172.00	-.7800	180.00	.0000			
1 28	13.00	.4000	-30.00	-1.0000	-10.00	-.5800	-8.00	-.6400	-6.50	-.6100	
5	-5.00	-.5200	-3.60	-.4000	8.40	1.0700	9.40	1.1600	10.50	1.2000	
5	11.50	1.1700	13.50	1.0400	16.00	.9600	30.00	1.0000			
1 28	13.00	.5000	-30.00	-1.0000	-10.00	-.7200	-8.00	-.7200	-6.50	-.6600	
5	-5.00	-.5500	-3.50	-.4000	6.00	.8400	7.50	1.0000	8.80	1.0700	
6	9.80	1.0800	11.50	1.0600	16.00	1.1000	30.00	1.0000			
1 26	12.00	.6000	-30.00	-1.0000	-10.00	-.5400	-8.00	-.5900	-6.40	-.6200	
5	-5.00	-.5800	-3.60	-.4400	5.00	.7900	6.00	.8600	7.50	.9000	
5	10.00	.9500	15.00	1.0900	30.00	1.0000					
1 26	12.00	.7000	-30.00	-1.0000	-10.00	-.6600	-7.00	-.7400	-6.00	-.7400	
5	-5.00	-.7200	-4.00	-.6000	4.00	.7500	4.80	.8000	6.00	.8300	
6	9.00	.8900	15.00	1.0300	30.00	1.0000					
1 24	11.00	.7500	-30.00	-1.0000	-10.00	-.7200	-6.00	-.7300	-5.00	-.7200	
5	-4.00	-.6500	-2.50	-.4500	2.30	.5400	2.90	.6300	3.80	.7000	
5	15.00	.9300	30.00	1.0000							
1 30	14.00	.8000	-30.00	-.9500	-14.00	-.8000	-12.00	-.7900	-10.00	-.8100	
5	-6.00	-.6900	-2.00	-.2500	.00	.0700	2.00	.3500	4.00	.5600	
6	6.00	.7050	8.00	.8050	9.00	.8400	15.00	.8500	30.00	1.0000	
1 30	14.00	.8500	-30.00	-.9500	-16.00	-.8030	-13.00	-.7720	-10.00	-.7400	
5	-6.00	-.6800	-2.00	-.2900	.00	-.0450	2.00	.2300	4.00	.4600	
6	6.00	.6400	8.00	.7600	9.00	.8020	15.00	.8500	30.00	1.0000	
1 30	14.00	.9000	-30.00	-.9500	-16.00	-.7540	-13.00	-.7120	-10.00	-.6700	
5	-6.00	-.6630	-2.00	-.3100	.00	-.1500	1.00	.0000	2.00	.1380	
6	4.00	.3900	6.00	.6400	8.00	.7650	10.00	.8100	30.00	1.0000	
1 28	13.00	.9500	-30.00	-.9500	-16.00	-.7410	-13.00	-.6960	-10.00	-.6510	
5	-6.00	-.6410	-2.00	-.2700	.00	-.0900	2.00	.1800	4.00	.4350	
6	6.00	.6800	8.00	.7950	10.00	.8100	30.00	1.0000			
2 8	.2273	.1300 AIRFOIL CD DATA									
1 58	28.00	.2000	-180.00	.0200	-179.00	.0250	-175.00	.0650	-172.00	.1100	
3	-150.00	.6420	-115.00	1.8800	-65.00	1.8800	-30.00	.6300	-30.00	.6300	
4	-14.00	.0279	-10.00	.0162	-4.00	.0103	-2.00	.0092	.00	.0094	
6	2.00	.0084	4.00	.0090	6.00	.0107	8.00	.0127	10.00	.0162	
5	12.00	.0216	14.00	.0279	30.00	.6300	30.10	.6300	65.00	1.8800	



START

COL	1	2	3	4	5	6	7	8
4	150.00	.6420	172.00	.1100	175.00	.0650	180.00	.0200
1 30	14.00	.3000	-30.00	.6300	-14.00	.0309	-10.00	.0165
5	-2.00	.0085	.00	.0086	2.00	.0089	4.00	.0084
6	8.00	.0128	10.00	.0165	12.00	.0234	14.00	.0309
1 28	13.00	.4000	-30.00	.6300	-12.00	.0260	-8.00	.0134
5	-2.00	.0083	.00	.0085	2.00	.0079	4.00	.0083
6	8.00	.0134	10.00	.0187	12.00	.0260	30.00	.6300
1 20	9.00	.5000	-30.00	.6300	-6.00	.0110	-4.00	.0097
7	.00	.0083	2.00	.0078	4.00	.0087	6.00	.0110
1 20	9.00	.6000	-30.00	.6300	-4.00	.0075	-2.00	.0089
6	2.00	.0068	4.00	.0074	6.00	.0117	14.00	.3300
1 38	18.00	.7000	-30.00	.6300	-12.00	.2560	-10.00	.2170
5	-6.00	.1060	-4.00	.0370	-3.00	.0200	-2.00	.0125
7	.00	.0090	1.00	.0140	2.00	.0250	4.00	.0600
6	8.00	.1350	10.00	.2050	15.00	.3600	30.00	.6300
1 36	17.00	.7500	-30.00	.6300	-12.00	.2750	-10.00	.2325
5	-6.00	.1220	-4.00	.0550	-2.00	.0220	-1.00	.0190
6	1.00	.0260	2.00	.0410	4.00	.0800	6.00	.1180
5	10.00	.2200	15.00	.3650	30.00	.6300		
1 34	16.00	.9000	-30.00	.6300	-12.00	.3200	-10.00	.2680
5	-6.00	.1680	-4.00	.1070	-2.00	.0660	-1.00	.0550
6	2.00	.0850	4.00	.1270	6.00	.1675	8.00	.2075
5	15.00	.3800	30.00	.6300				
2 9	.4545	SC1095R8 AIRFOIL CD DATA						
1 66	32.00	.3000	-180.00	.0200	-179.00	.0250	-175.00	.0650
3	-150.00	.6420	-115.00	1.8800	-65.00	1.8800	-30.00	.6300
4	-10.00	.2500	-7.00	.0860	-6.00	.0500	-5.60	.0390
5	-4.00	.0180	-3.00	.0110	.00	.0090	4.00	.0100
5	10.00	.0140	11.00	.0180	12.00	.0220	13.00	.0300
5	16.30	.1780	29.90	.6300	30.00	.6300	65.00	1.8800
4	172.00	.1100	175.00	.0650	180.00	.0200		
1 40	19.00	.4000	-30.00	.6300	-10.00	.2600	-7.00	.1010
5	-5.00	.0340	-4.50	.0200	-4.00	.0130	-3.00	.0100
6	1.00	.0080	3.00	.0090	6.00	.0110	8.00	.0150
5	10.00	.0270	11.00	.0500	12.80	.1360	15.00	.2300
1 40	19.00	.5000	-30.00	.6300	-10.00	.2700	-7.00	.1060
5	-5.00	.0380	-4.00	.0240	-3.00	.0150	-2.00	.0100
7	.00	.0080	2.00	.0080	4.00	.0095	5.00	.0110
6	7.00	.0270	8.00	.0440	12.00	.1780	15.00	.2800
1 42	20.00	.6000	-30.00	.6300	-10.00	.2880	-8.00	.1370
5	-5.00	.0450	-4.60	.0350	-4.00	.0250	-3.00	.0170
5	-1.00	.0085	.00	.0080	1.00	.0080	2.00	.0100
6	4.00	.0250	5.00	.0380	6.00	.0600	10.50	.1760
5	30.00	.6300						
1 30	14.00	.7000	-30.00	.6300	-10.00	.3100	-7.00	.1550
5	-5.00	.0600	-3.00	.0270	-2.00	.0130	-1.00	.0100
6	1.00	.0115	2.00	.0250	8.00	.1600	15.00	.3200
1 32	15.00	.7500	-30.00	.6300	-10.00	.3260	-7.00	.1680
5	-5.00	.0850	-2.40	.0200	-2.00	.0150	-1.00	.0120
6	1.00	.0240	4.00	.0950	6.00	.1340	7.20	.1550
5	30.00	.6300						
1 42	20.00	.8000	-30.00	.6300	-12.00	.2900	-10.00	.2250
5	-6.00	.1220	-4.00	.0750	-3.00	.0420	-2.00	.0280
6	-.50	.0255	.00	.0250	.50	.0350	1.00	.0420

START		COL										
		1	2	3	4	5	6	7	8			
6		4.00	.1080	6.00	.1480	8.00	.1850	10.00	.2300	12.00	.2850	
5		30.00	.6300									
1	36	17.00	.9000	-30.00	.6300	-12.00	.3300	-10.00	.2620	-8.00	.2100	
5		-6.00	.1630	-4.00	.1150	-2.00	.0660	-1.00	.0630	.00	.0600	
6		1.00	.0780	2.00	.1000	4.00	.1380	6.00	.1820	8.00	.2210	
5		10.00	.2620	12.00	.3225	30.00	.6300					
1	32	15.00	1.0000	-30.00	.6300	-12.00	.3700	-10.00	.2970	-8.00	.2480	
5		-6.00	.2020	-4.00	.1520	-2.00	.1170	.00	.1000	2.00	.1360	
6		4.00	.1700	6.00	.2150	8.00	.2550	10.00	.2980	12.00	.3630	
5		30.00	.6300									
2	9	.8143	SC1095R8 AIRFOIL CD DATA									
1	66	32.00	.3000	-180.00	.0200	-179.00	.0250	-175.00	.0650	-172.00	.1100	
3		-150.00	.6420	-115.00	1.8800	-65.00	1.8800	-30.00	.6300	-30.00	.6300	
4		-10.00	.2500	-7.00	.0860	-6.00	.0500	-5.60	.0390	-4.80	.0280	
5		-4.00	.0180	-3.00	.0110	.00	.0090	4.00	.0100	9.00	.0130	
5		10.00	.0140	11.00	.0180	12.00	.0220	13.00	.0300	14.00	.0640	
5		16.30	.1780	29.90	.6300	30.00	.6300	65.00	1.8800	150.00	.6420	
4		172.00	.1100	175.00	.0650	180.00	.0200					
1	40	19.00	.4000	-30.00	.6300	-10.00	.2600	-7.00	.1010	-6.00	.0620	
5		-5.00	.0340	-4.50	.0200	-4.00	.0130	-3.00	.0100	-2.00	.0080	
6		1.00	.0080	3.00	.0090	6.00	.0110	8.00	.0150	9.00	.0175	
5		10.00	.0270	11.00	.0500	12.80	.1360	15.00	.2300	30.00	.6300	
1	40	19.00	.5000	-30.00	.6300	-10.00	.2700	-7.00	.1060	-6.00	.0700	
5		-5.00	.0380	-4.00	.0240	-3.00	.0150	-2.00	.0100	-1.00	.0085	
7		.00	.0080	2.00	.0080	4.00	.0095	5.00	.0110	6.00	.0180	
6		7.00	.0270	8.00	.0440	12.00	.1780	15.00	.2800	30.00	.6300	
1	42	20.00	.6000	-30.00	.6300	-10.00	.2880	-8.00	.1370	-6.00	.0810	
5		-5.00	.0450	-4.60	.0350	-4.00	.0250	-3.00	.0170	-2.00	.0120	
5		-1.00	.0085	.00	.0080	1.00	.0080	2.00	.0100	3.00	.0160	
6		4.00	.0250	5.00	.0380	6.00	.0600	10.50	.1760	15.00	.3000	
5		30.00	.6300									
1	30	14.00	.7000	-30.00	.6300	-10.00	.3100	-7.00	.1550	-6.00	.0940	
5		-5.00	.0600	-3.00	.0270	-2.00	.0130	-1.00	.0100	.00	.0130	
6		1.00	.0115	2.00	.0250	8.00	.1600	15.00	.3200	30.00	.6300	
1	32	15.00	.7500	-30.00	.6300	-10.00	.3260	-7.00	.1680	-6.00	.1090	
5		-5.00	.0850	-2.40	.0200	-2.00	.0150	-1.00	.0120	.00	.0135	
6		1.00	.0240	4.00	.0950	6.00	.1340	7.20	.1550	15.00	.3300	
5		30.00	.6300									
1	42	20.00	.8000	-30.00	.6300	-12.00	.2900	-10.00	.2250	-8.00	.1700	
5		-6.00	.1220	-4.00	.0750	-3.00	.0420	-2.00	.0280	-1.00	.0260	
6		-.50	.0255	.00	.0250	.50	.0350	1.00	.0420	2.00	.0700	
6		4.00	.1080	6.00	.1480	8.00	.1850	10.00	.2300	12.00	.2850	
5		30.00	.6300									
1	36	17.00	.9000	-30.00	.6300	-12.00	.3300	-10.00	.2620	-8.00	.2100	
5		-6.00	.1630	-4.00	.1150	-2.00	.0660	-1.00	.0630	.00	.0600	
6		1.00	.0780	2.00	.1000	4.00	.1380	6.00	.1820	8.00	.2210	
5		10.00	.2620	12.00	.3225	30.00	.6300					
1	32	15.00	1.0000	-30.00	.6300	-12.00	.3700	-10.00	.2970	-8.00	.2480	
5		-6.00	.2020	-4.00	.1520	-2.00	.1170	.00	.1000	2.00	.1360	
6		4.00	.1700	6.00	.2150	8.00	.2550	10.00	.2980	12.00	.3630	
5		30.00	.6300									
2	8	.8144	SC1095 AIRFOIL CD DATA									
1	70	34.00	.3000	-180.00	.0200	-179.00	.0250	-175.00	.0650	-172.00	.1100	
3		-150.00	.6420	-115.00	1.8800	-90.00	2.0800	-65.00	1.8800	-30.00	.6300	

START COL	1	2	3	4	5	6	7	8
4	-10.00	.2100	-8.60	.0590	-7.60	.0300	-6.90	.0160
5	-5.50	.0095	-4.00	.0085	.00	.0083	4.00	.0095
6	9.00	.0150	10.00	.0185	10.80	.0250	12.00	.0560
5	30.00	.6300	30.10	.6300	65.00	1.8800	65.10	1.8800
4	150.00	.6400	172.00	.1100	175.00	.0650	179.00	.0250
1 38	18.00	.4000	-30.00	.6300	-10.00	.2150	-7.20	.0600
5	-6.20	.0240	-5.40	.0140	-4.80	.0110	-3.80	.0085
6	4.00	.0083	6.00	.0105	8.00	.0140	9.00	.0170
5	10.20	.0270	10.60	.0400	15.00	.2200	30.00	.6300
1 38	18.00	.5000	-30.00	.6300	-10.00	.1500	-8.00	.0500
5	-5.70	.0200	-5.50	.0140	-4.80	.0100	-3.80	.0085
6	3.00	.0085	4.50	.0095	5.80	.0125	7.00	.0200
6	9.00	.0550	12.00	.1600	15.00	.2400	30.00	.6300
1 34	16.00	.6000	-30.00	.6300	-10.00	.1600	-5.60	.0360
5	-4.20	.0150	-3.50	.0120	-2.50	.0090	-1.50	.0083
6	3.00	.0095	4.00	.0120	4.80	.0175	5.60	.0300
5	15.00	.2770	30.00	.6300				
1 30	14.00	.7000	-30.00	.6300	-10.00	.2100	-4.00	.0390
5	-3.00	.0200	-2.30	.0130	-1.40	.0090	.00	.0083
6	1.90	.0090	2.50	.0130	3.00	.0200	15.00	.3080
1 30	14.00	.7500	-30.00	.6300	-10.00	.1850	-3.20	.0300
5	-2.00	.0150	-1.40	.0110	-.50	.0085	.00	.0085
6	1.20	.0110	1.60	.0160	2.00	.0225	15.00	.3200
1 42	20.00	.8000	-30.00	.6300	-12.00	.2900	-10.00	.2250
5	-6.00	.1000	-4.00	.0650	-3.00	.0420	-2.00	.0280
6	-.50	.0190	.00	.0170	.50	.0200	1.00	.0250
6	4.00	.0900	6.00	.1280	8.00	.1700	10.00	.2250
5	30.00	.6300						
1 36	17.00	.9000	-30.00	.6300	-12.00	.3300	-10.00	.2620
5	-6.00	.1490	-4.00	.1150	-2.00	.0660	-1.00	.0550
6	1.00	.0600	2.00	.0800	4.00	.1200	6.00	.1670
5	10.00	.2620	12.00	.3225	30.00	.6300		
2 9	.2273	.1300AIRFOIL CM DATA						
1 68	33.00	.2000	-180.00	-.0130	-174.00	.3590	-160.00	.3000
3	-125.00	.5570	-90.00	.5550	-60.00	.3950	-30.00	.1700
4	-14.00	.0259	-10.00	.0136	-4.00	.0007	-2.00	.0002
6	2.00	-.0013	4.00	.0011	6.00	-.0026	8.00	-.0072
5	12.00	-.0195	14.00	-.0259	30.00	-.1700	45.00	-.2950
5	95.00	-.5550	110.00	-.5600	125.00	-.5570	135.00	-.5380
4	150.00	-.4380	160.00	-.3000	174.00	-.3590	180.00	-.0130
1 30	14.00	.3000	-30.00	.1700	-14.00	.0246	-10.00	.0127
5	-2.00	-.0001	.00	.0000	2.00	-.0011	4.00	.0011
6	8.00	-.0067	10.00	-.0127	12.00	-.0183	14.00	-.0246
1 24	11.00	.4000	-30.00	.1700	-10.00	.0122	-4.00	-.0009
7	.00	.0001	2.00	-.0009	4.00	.0015	6.00	-.0019
5	10.00	-.0122	30.00	-.1700				
1 20	9.00	.5000	-30.00	.1700	-6.00	.0018	-4.00	-.0026
7	.00	.0003	2.00	-.0008	4.00	.0019	6.00	-.0018
1 16	7.00	.6000	-30.00	.1700	-4.00	-.0046	-2.00	-.0014
6	2.00	-.0006	4.00	.0021	30.00	-.1700		
1 28	13.00	.7000	-30.00	.2000	-20.00	.1300	-12.00	.0850
5	-4.00	-.0160	-2.00	-.0220	.00	-.0240	3.40	-.0340
6	8.10	-.0865	9.00	-.0920	20.00	-.1500	30.00	-.2000
1 28	13.00	.7500	-30.00	.1600	-10.00	.0700	-8.00	.0500

START COL	1	2	3	4	5	6	7	8		
5	-4.00	.0050	-2.00	-.0230	.00	-.0380	2.00	-.0395	4.00	-.0650
6	6.00	-.1010	8.00	-.1050	10.00	-.1050	30.00	-.1600		
1 32	15.00	.8000	-30.00	.1500	-8.00	.0750	-6.00	.0600	-4.00	.0350
5	-2.00	-.0120	.00	-.0200	.50	-.0150	1.00	-.0120	1.50	-.0170
6	2.00	-.0290	4.00	-.0750	6.00	-.1000	8.00	-.1150	18.00	-.1300
5	30.00	-.1500								
1 36	17.00	.9000	-30.00	.1400	-8.00	.1200	-6.00	.0970	-4.00	.0430
5	-2.00	-.0120	.00	-.0200	.10	-.0010	.25	.0120	.50	.0170
7	.75	.0090	1.00	-.0070	1.50	-.0300	2.00	-.0350	4.00	-.0830
6	6.00	-.1370	8.00	-.1600	30.00	-.1900				
2 8	.4545	SC1095R8 AIRFOIL CM DATA								
1 68	33.00	.3000	-180.00	-.0130	-174.00	.3590	-160.00	.3000	-145.00	.4810
3	-125.00	.5570	-90.00	.5550	-60.00	.3950	-30.00	.1437	-30.00	.1437
4	-10.00	.1065	-7.40	.0989	-6.40	.0052	-5.00	.0032	4.00	.0019
5	14.00	.0135	15.20	-.0932	19.00	-.1303	30.00	-.1437	30.10	-.1437
5	34.90	-.2220	35.00	-.2220	45.00	-.2950	60.00	-.3950	80.00	-.5000
5	95.00	-.5550	110.00	-.5600	125.00	-.5570	135.00	-.5380	145.00	-.4810
4	150.00	-.4380	160.00	-.3000	174.00	-.3590	180.00	-.0130		
1 22	10.00	.4000	-30.00	.1437	-10.00	.1427	-7.00	.1356	-6.00	.0038
5	-5.00	.0019	8.00	.0124	11.20	.0115	12.20	-.1299	18.00	-.1341
5	30.00	-.1437								
1 20	9.00	.5000	-30.00	.1437	-10.00	.1108	-9.00	.0952	-7.00	.0483
5	-5.00	.0045	8.00	.0031	12.00	-.0800	16.00	-.1293	30.00	-.1437
1 24	11.00	.6000	-30.00	.1437	-25.00	.1267	-20.00	.1047	-15.00	.0878
4	-10.00	.0707	-3.00	-.0004	5.00	.0087	8.00	-.0490	13.00	-.1415
5	15.00	-.1352	30.00	-.1437						
1 32	15.00	.7000	-30.00	.1437	-25.00	.1416	-20.00	.1397	-15.00	.1327
4	-10.00	.1306	-3.00	-.0119	.00	-.0025	1.00	-.0064	2.00	-.0073
6	3.00	-.0241	4.00	-.0569	6.00	-.1105	8.00	-.1347	15.00	-.1470
5	30.00	-.1437								
1 38	18.00	.7500	-30.00	.1437	-25.00	.1361	-20.00	.1335	-15.00	.1260
4	-10.00	.1234	-8.00	.1039	-6.00	.0544	-4.00	-.0291	-3.00	-.0335
5	-2.00	-.0245	.00	-.0146	1.00	-.0197	2.00	-.0459	3.00	-.0943
6	4.00	-.1154	5.00	-.1177	15.00	-.1526	30.00	-.1437		
1 32	15.00	.8000	-30.00	.1500	-8.00	.0750	-6.00	.0600	-4.00	.0350
5	-2.00	-.0120	.00	-.0200	.50	-.0150	1.00	-.0120	1.50	-.0170
6	2.00	-.0290	4.00	-.0750	6.00	-.1000	8.00	-.1150	18.00	-.1300
5	30.00	-.1500								
1 36	17.00	.9000	-30.00	.1400	-8.00	.1200	-6.00	.0970	-4.00	.0430
5	-2.00	-.0120	.00	-.0200	.10	-.0010	.25	.0120	.50	.0170
7	.75	.0090	1.00	-.0070	1.50	-.0300	2.00	-.0350	4.00	-.0830
6	6.00	-.1370	8.00	-.1600	30.00	-.1900				
2 8	.8143	SC1095R8 AIRFOIL CM DATA								
1 68	33.00	.3000	-180.00	-.0130	-174.00	.3590	-160.00	.3000	-145.00	.4810
3	-125.00	.5570	-90.00	.5550	-60.00	.3950	-30.00	.1437	-30.00	.1437
4	-10.00	.1065	-7.40	.0989	-6.40	.0052	-5.00	.0032	4.00	.0019
5	14.00	.0135	15.20	-.0932	19.00	-.1303	30.00	-.1437	30.10	-.1437
5	34.90	-.2220	35.00	-.2220	45.00	-.2950	60.00	-.3950	80.00	-.5000
5	95.00	-.5550	110.00	-.5600	125.00	-.5570	135.00	-.5380	145.00	-.4810
4	150.00	-.4380	160.00	-.3000	174.00	-.3590	180.00	-.0130		
1 22	10.00	.4000	-30.00	.1437	-10.00	.1427	-7.00	.1356	-6.00	.0038
5	-5.00	.0019	8.00	.0124	11.20	.0115	12.20	-.1299	18.00	-.1341
5	30.00	-.1437								
1 20	9.00	.5000	-30.00	.1437	-10.00	.1108	-9.00	.0952	-7.00	.0483

START COL	1	2	3	4	5	6	7	8
5	-5.00	.0045	8.00	.0031	12.00	-.0800	16.00	-.1293
1 24	11.00	.6000	-30.00	.1437	-25.00	.1267	-20.00	.1047
4	-10.00	.0707	-3.00	-.0004	5.00	.0087	8.00	-.0490
5	15.00	-.1352	30.00	-.1437				
1 32	15.00	.7000	-30.00	.1437	-25.00	.1416	-20.00	.1397
4	-10.00	.1306	-3.00	-.0119	.00	-.0025	1.00	-.0064
6	3.00	-.0241	4.00	-.0569	6.00	-.1105	8.00	-.1347
5	30.00	-.1437						
1 38	18.00	.7500	-30.00	.1437	-25.00	.1361	-20.00	.1335
4	-10.00	.1234	-8.00	.1039	-6.00	.0544	-4.00	-.0291
5	-2.00	-.0245	.00	-.0146	1.00	-.0197	2.00	-.0459
6	4.00	-.1154	5.00	-.1177	15.00	-.1526	30.00	-.1437
1 32	15.00	.8000	-30.00	.1500	-8.00	.0750	-6.00	.0600
5	-2.00	-.0120	.00	-.0200	.50	-.0150	1.00	-.0120
6	2.00	-.0290	4.00	-.0750	6.00	-.1000	8.00	-.1150
5	30.00	-.1500						
1 36	17.00	.9000	-30.00	.1400	-8.00	.1200	-6.00	.0970
5	-2.00	-.0120	.00	-.0200	.10	-.0010	.25	.0120
7	.75	.0090	1.00	-.0070	1.50	-.0300	2.00	-.0350
6	6.00	-.1370	8.00	-.1600	30.00	-.1900		
2 8	.8144	SC1095 AIRFOIL CM DATA						
1 60	29.00	.3000	-180.00	-.0130	-174.00	.3590	-160.00	.3000
3	-125.00	.5570	-90.00	.5550	-60.00	.3950	-30.00	.1650
4	-10.00	.0799	-8.00	-.0009	12.00	.0084	16.00	-.1482
5	30.10	-.1437	34.90	-.2220	35.00	-.2220	45.00	-.2950
5	80.00	-.5000	95.00	-.5550	110.00	-.5600	125.00	-.5570
4	145.00	-.4810	150.00	-.4380	160.00	-.3000	174.00	-.3590
1 20	9.00	.4000	-30.00	.1437	-10.00	.1364	-6.00	-.0009
5	10.00	.0110	11.20	-.0039	12.40	-.0952	16.00	-.1329
1 20	9.00	.5000	-30.00	.1437	-10.00	.1336	-6.00	-.0019
5	10.00	-.0130	12.00	-.0860	14.00	-.1254	16.00	-.1548
1 20	9.00	.6000	-30.00	.1437	-10.00	.0975	-5.00	-.0069
6	7.40	-.0099	11.00	-.0879	13.20	-.1263	16.00	-.1549
1 22	10.00	.7000	-30.00	.1437	-10.00	.0847	-6.00	.0834
6	2.00	.0032	4.00	-.0132	6.00	-.0814	8.00	-.0954
5	30.00	-.1437						
1 22	10.00	.7500	-30.00	.1437	-10.00	.1235	-6.00	.1236
6	1.40	-.0071	2.60	-.0319	4.00	-.0942	5.40	-.1135
5	30.00	-.1437						
1 32	15.00	.8000	-30.00	.1500	-8.00	.0750	-6.00	.0600
5	-2.00	-.0120	.00	-.0200	.50	-.0150	1.00	-.0120
6	2.00	-.0290	4.00	-.0750	6.00	-.1000	8.00	-.1150
5	30.00	-.1500						
1 36	17.00	.9000	-30.00	.1400	-8.00	.1200	-6.00	.0970
5	-2.00	-.0120	.00	-.0200	.10	-.0010	.25	.0120
7	.75	.0090	1.00	-.0070	1.50	-.0300	2.00	-.0350
6	6.00	-.1370	8.00	-.1600	30.00	-.1900		
2 2	1	.620000&03	.220000&02					
2 3	6	.378790-01	.970000&00	.150000&02				
2 1	49	.383056&05						
2 4	31	.271404&01	.517779&01	.817320&01	.000000			
2 2	37	.527151&01	.155854&02					
2 3	40	.574746&01	.165922&02	.000000				
2 3	3	.002378	1112.	4.				

END OF  
G400  
AIRFOIL  
DATA

G400  
AIRFOIL  
DATA



START COL	1	2	3	4	5	6	7	8
2 3 9 2.5		10.		.002				
2 1 17 .075237								
2 2 19 1.0		1.0						
2 3 23 10.		.306		.05				
2 3 28 3.		2.		1.				
2 4 31 2.71865		5.17821		8.17329		12.60132		
2 2 37 5.27156		15.58567						
2 2 40 5.74726		16.59155						
2 4 45 32.2		1.0		0.		1.		
2 1 51 1.								
2 4 56 11380.		525.		200.		50.		
2 1 60 0.0								
2 4 62 -84.		50.		-145.		50.		
2 1 66 1.0								
2 4 67 .063		-.0018		-.095		-.0003		
2 4 73 1.		1.		1.		1.		
2 1 78 2.0								
2 1 94 .03								
2 1 96 1.								
2 1 97 -10.								
2 5 100 .393939-01		.397727-01		.662879-01		.666667-01		.100000&00
2 5 105 .100000&00		.100000&00		.100000&00		.100000&00		.454545-01
2 5 110 .378788-01		.568182-01		.606061-01		.246212-01		.246212-01
2 5 115 .235776&00		.210839&00		.194752&00		.155217&00		.219068&00
2 5 120 .213168&00		.308012&00		.250062&00		.252857&00		.115528&00
2 5 125 .993789-01		.151397&00		.205745&00		.543543-01		.197205-01
2 5 130 .165		.861		2.277		4.081		4.0
2 5 135 3.5		2.5		1.5		0.5		-.227
2 5 140 -.644		-1.117		-1.705		-2.131		-2.377
2 5 145 0.		.39		.87		1.24		1.30
2 5 150 1.30		1.30		1.30		1.30		1.30
2 5 155 1.30		1.292		1.292		1.205		0.923
2 5 160 .265152&05		.530303&06		.109848&06		.405303&05		.340909&05
2 5 165 .227273&05		.208333&05		.208333&05		.217803&05		.217803&05
2 5 170 .217803&05		.198864&05		.198864&05		.113636&05		.454545&04
2 5 175 .492424&05		.965909&06		.795455&06		.878788&06		.878788&06
2 5 180 .878788&06		.852273&06		.852273&06		.946970&06		.946970&06
2 5 185 .852273&06		.750000&06		.750000&06		.549242&06		.227273&06
2 5 205 .233548-02		.100220-01		.117748-01		.144163-01		.144209-01
2 5 210 .144155-01		.124706-01		.146393-01		.150035-01		.156243-01
2 5 215 .140229-01		.141757-01		.140602-01		.118017-01		.226192-01
2 5 220 .000000		.000000		.000000		.000000		.000000
2 5 225 .000000		.000000		.000000		.000000		.000000
2 5 230 .000000		.000000		.000000		.000000		.000000
2 5 235 .282864-02		.638917-02		.992098-02		.109920-01		.109270-01
2 5 240 .108797-01		.107979-01		.107962-01		.109534-01		.110651-01
2 5 245 .116250-01		.121644-01		.123785-01		.125252-01		.909964-02
2 5 250 0.		.0017		.0034		.001		-.00015
2 5 255 -.0002		-.0001		-.0001		-.0001		-.00065
2 5 260 -.0006		-.0006		-.0006		-.002		-.01
2 5 265 .0004		-.0021		-.0036		-.0026		-.0026
2 5 270 -.0027		-.0022		.0001		.0027		.0027
2 5 275 -.0001		0.		-.0006		-.0072		-.0193
2 3 498 2.		1.		1.				

START	COL	1	2	3	4	5	6	7	8
2	1	50123.0							
2	4	502-.1538	-812.5	-.1385	-801.7				
2	4	506-.1277	-782.7	-.1185	-758.3				
2	2	510-.1077	-687.9						
2	4	512 -.0923	-492.9	-.0769	-335.8				
2	4	516 -.0615	-205.8	-.0462	-113.8				
2	4	520 -.0308	-54.2	-.0154	-16.3				
2	4	524 0.	0.	.0154	16.3				
2	4	528 .0308	54.2	.0462	113.8				
2	4	532 .0615	205.8	.0769	335.8				
2	4	536 .0923	492.9	.1077	687.9				
2	4	540.1185	758.3	.1277	782.7				
2	4	544.1385	801.7	.1538	812.5				
2	5	600 .100000&01	.100000&01	.100000&01	.100000&01	.100000&01			
2	5	605 .100000&01	.100000&01	.100000&01	.100000&01	.100000&01			
2	5	610 .100000&01	.100000&01	.100000&01	.100000&01	.100000&01			
2	5	615 .100000&01	.100000&01	.100000&01	.100000&01	.100000&01			
2	5	620 .100000&01	.100000&01	.100000&01	.100000&01	.100000&01			
2	5	625 .100000&01	.100000&01	.100000&01	.100000&01	.100000&01			
2	5	705 .3305	1.062	1.770	1.780	-1.0			
2	5	710 -1.0	-1.0	-1.0	-1.0	-.455			
2	5	715 -.379	-.568	-.606	-.246	-.246			
2	1	975 12.24							
2	5	12 -.2.000000	4.000000	8.662000	-.033000	74.000000			
2	1	55 .000							
2	4	67 .129528&00	-.141866-01	-.113232&00	-.521935-02				
2	1	77 .000							
2	3	80 .000000	.000000	.000000					
2	4	280 .784144-02	-.194652-02	-.180319-04	.396423-04				
2	4	286 .160074-02	-.877402-03	.313696-03	-.160329-04				
2	3	292 .318858-03	-.359245-04	.000000					
2	3	295 -.116773-02	-.840570-05	.000000					
2	3	298 .464027-02	.000000	.000000					
2	3	301 .488714-02	.000000	.000000					
2	1	1675.							
2	4	56 10690.	934.	200.	50.				
2	4	62 190.	50.	121.	50.				
2	1	975 1413.							
2	4	31 2.69887	5.05789	7.87936	12.0230				
2	2	37 4.9412	14.43543						
2	2	40 5.29906	15.25807						
2	5	12 -3.100000	5.726000	8.702000	-.038420	120.000000			
2	1	55 .000							
2	4	67 .100802&00	-.439199-01	-.120465&00	-.253079-02				
2	1	77 .000							
2	3	80 .000000	.000000	.000000					
2	4	280 .872010-02	-.325225-02	-.257407-03	-.718091-05				
2	4	286 .130772-01	-.362354-02	.113452-04	.486148-03				
2	3	292 .695289-03	-.996783-04	.000000					
2	3	295 -.241781-02	-.125030-05	.000000					
2	3	298 .963683-02	.000000	.000000					
2	3	301 .165675-01	.000000	.000000					
2	1	55 .000							
2	4	67 .107118&00	-.372296-01	-.129465&00	.195691-03				

START	COL	1	2	3	4	5	6	7	8
2	1	77	.000						
2	3	80	.000000	.000000	.000000				
2	4	280	.795194-02	-.278393-02	-.255864-03	-.418983-04			
2	4	286	.945542-02	-.446161-02	-.451126-03	-.885648-04			
2	3	292	.499352-03	-.994013-04	.000000				
2	3	295	-.973031-03	-.458668-04	.000000				
2	3	298	.928813-02	.000000	.000000				
2	3	301	.353693-01	.000000	.000000				
2	4	12	-3.4	5.94	8.54	-.0384			
2	2	12	-2.5	5.869					
2	1	96	1.						
2	5	12	-2.500000	5.869000	8.540000	-.038400	120.000000		
2	1	55	.000						
2	4	67	.102165&00	-.130010-01	-.147140&00	-.515817-03			
2	1	77	.000						
2	3	80	.000000	.000000	.000000				
2	4	280	.671938-02	-.257678-02	-.321865-03	-.331452-04			
2	4	286	.431544-02	-.247319-02	.630475-04	.843163-04			
2	3	292	.665038-03	-.111606-03	.000000				
2	3	295	-.103685-02	-.888233-04	.000000				
2	3	298	.956991-02	.000000	.000000				
2	3	301	.147674-01	.000000	.000000				
2	1	24	-.306						
2	1	998	15.						
2	1	15	0.						
2	1	7	1.0						
2	2	53	1.	1.					
2	2	9	2.5	1.0					
2	1	47	1.						
2	1	10	2.						
2	4	67	.114018&00	-.320345-02	-.823881-01	.627667-03			
2	4	280	.408962-02	-.816563-03	.300549-03	.000000			
2	4	286	.243441-02	-.118490-02	-.106155-03	.000000			
2	3	292	.458550-03	-.225752-04	.000000				
2	3	295	-.412110-04	.367738-04	.000000				
2	3	298	-.793417-02	.000000	.000000				
2	3	301	.165067-01	.000000	.000000				
2	1	10	10.						
2	1	47	0.						
2	1	60	0.0						
2	5	901	35.	-1.	4.4110	0.1553	.02308		
2	2	906	0.	.006578					
2	5	911	40.	1.0	2.6136	0.0932	.004863		
2	2	916	0.	.001872					
2	2	921	2.85	3.85					
2	1	11	.005						
2	3	28	1.	0.	0.				
2	1	998	0.						
2	1	930	1.						
2	1	931	0.5						
2	1	932	0.05						
2	1	23	90.						
2	1	23	10.						
2	3	28	3.	2.	1.				



START  
COL -----1-----2-----3-----4-----5-----6-----7-----8-----

2	1	54	1.						
2	1	60	0.						
2	1	900	0.						
2	1	7	0.970						
2	2	10	5.0	0.002					
2	1	15	-.0384						
2	1	23	90.0						
2	3	28	1.	0.	0.				
2	1	47	0.0						
2	2	53	0.0	0.0					
2	1	76	1.0						
2	4	67	.962000-01	-.499000-02	-.117000-00	.185000-02			
2	1	280	.324000-02						
2	1	286	.187000-02						
2	4	67	.102160-00	-.130000-01	-.147140-00	-.515817-03			
2	1	77	.000000-00						
2	3	80	.000000-00	.000000-00	.000000-00				
2	4	280	.671900-02	-.257700-02	-.322000-03	-.330000-04			
2	4	286	.431500-02	-.247300-02	.630000-04	.840000-04			
2	3	292	.665000-03	-.112000-03	.000000-00				
2	3	295	-.103700-02	-.890000-04	.000000-00				
2	3	298	.957000-02	.000000-00	.000000-00				
2	3	301	.147670-01	.000000-00	.000000-00				
2	2	368	30.0	30.0					
2	1	930	0.						
2	1	975	1.0						
2	2	998	15.	1.					
1	-1	99	-1.						
4	5	3	2	15					
12			.020115	.060485	.114647	.182705	.268390		
12			.371702	.475494	.579761	.684445	.760786		
12			.804585	.854402	.916221	.961102	.987034		
11			1.019365	1.020604	1.022214	1.025719	1.030562		
11			1.035514	1.040328	1.044867	1.048571	1.050679		
11			1.051646	1.052537	1.053130	1.053223	1.053250		
12			.050106	.005290	.027910	.058107	.047494		
12			.052087	.048487	.041587	.032724	.026153		
12			.020573	.014804	.005346	.001599	.000464		
11			-.035324	-.105565	-.197745	-.306483	-.420787		
11			-.510670	-.523480	-.428072	-.210688	.020134		
12			.176515	.372340	.634325	.829932	.943242		
10			-1.787021	-1.757241	-1.705715	-1.534517	-1.175691		
11			-.555414	.379553	1.563396	2.764082	3.555470		
11			3.938651	4.304066	4.556306	4.596912	4.608159		
11			1.039567	.147416	1.101046	3.511344	4.634360		
11			8.253508	11.092482	12.167628	11.516973	10.094505		
11			8.301038	6.197640	2.310754	.691845	.184140		
12			.064107	.188614	.342436	.493130	.556924		
12			.420402	.079711	-.330515	-.571286	-.503575		
11			-.352683	-.089097	.345429	.694108	.897584		
11			3.229025	3.028987	2.694600	1.669128	-.201246		
10			-2.465080	-4.012176	-3.582915	-.636867	2.670996		
11			4.537740	6.488847	7.971182	8.228701	8.304077		
10			-7.082598	-.973772	-6.907229	-19.764089	-20.888335		

START COL	1	2	3	4	5	6	7	8
9	-22.017695	-7.142061	17.152925	38.906328	45.772762			
10	42.499650	34.883753	14.096544	4.481664	1.310760			
11	-.091262	-.261845	-.450110	-.568021	-.406629			
12	.121314	.557973	.419618	-.215894	-.544668			
11	-.542986	-.351904	.145454	.597245	.864457			
10	-4.565267	-3.949045	-2.954343	-.207005	3.786560			
11	5.561887	1.899096	-4.490898	-6.132143	-1.699702			
11	1.829387	6.174532	10.012082	10.746545	10.967014			
10	22.037535	2.952719	19.707931	48.181370	32.782927			
10	-8.758819	-59.677319	-48.181392	22.394489	74.758739			
10	88.022054	84.594501	38.440210	12.977514	3.880800			
12	.104490	.287092	.443164	.417717	-.063962			
11	-.632288	-.277453	.573110	.410864	-.234052			
11	-.476029	-.496523	-.036781	.502743	.831057			
11	5.167033	3.821447	1.767099	-2.956820	-6.945648			
10	-1.806917	7.805817	5.097219	-7.375849	-7.447679			
10	-3.662047	3.238869	11.272986	13.058670	13.617260			
9	-48.801096	-6.291246	-37.922481	-68.444722	.523463			
10	97.679298	50.680008	-97.555464	-85.785445	46.618084			
9	119.355020	158.153801	87.340251	32.280864	10.095360			
12	.020545	.061777	.117067	.186395	.273339			
12	.377696	.482024	.586243	.690260	.765727			
12	.808878	.857824	.918356	.962175	.987410			
11	1.041162	1.042291	1.042706	1.043102	1.043487			
11	1.043510	1.042848	1.041292	1.038806	1.036392			
11	1.034802	1.032566	1.029433	1.026693	1.023290			
12	.036450	.004226	.006667	.005509	.002759			
11	-.002876	-.010916	-.020567	-.027814	-.034451			
11	-.041925	-.053021	-.052054	-.084640	-.113177			
11	-.063817	-.179486	-.308352	-.451506	-.583769			
11	-.652679	-.602566	-.428866	-.147128	.104226			
12	.259102	.443085	.678352	.850621	.950193			
10	-3.173886	-2.606714	-2.332051	-1.917475	-1.209519			
11	-.110098	1.123895	2.311645	3.224922	3.629626			
11	3.800355	3.952725	4.034032	4.043288	4.045387			
10	15.900774	2.444311	5.517954	7.466193	9.898063			
10	11.727483	12.434904	10.848767	7.045677	4.665932			
11	3.641418	2.321244	.658927	.126185	.031944			
12	.180394	.452329	.629099	.746205	.661084			
12	.283988	-.213068	-.573290	-.598722	-.390090			
11	-.200945	.067617	.453363	.745760	.915126			
11	8.704553	4.576916	2.753206	.514200	-2.394996			
10	-4.679135	-4.606005	-2.090078	1.618859	3.970865			
11	5.083374	6.156427	6.788640	6.870606	6.890002			
8	-119.545124	-17.045402	-33.296110	-35.521732	-30.814392			
9	-11.808906	13.716356	33.658911	34.989853	28.799730			
10	24.712104	17.195680	5.419648	1.151754	.297370			
12	.200637	.240205	.262719	.311205	.397767			
12	.518065	.648944	.770433	.869146	.920973			
12	.944931	.967960	.987142	.992719	.998798			
11	1.758024	.247129	.526150	.921986	1.092229			
11	1.292414	1.296451	1.104944	.848199	.639553			
12	.530701	.407829	.214200	.162671	.236443			
11	-.587522	-.702665	-.760046	-.858523	-.970670			

START	COL	1	2	3	4	5	6	7	8
11		-.972005	-.783282	-.408148	.068206	.399219			
12		.567997	.739491	.891215	.937638	.989314			
10		-5.131750	-.674858	-1.206376	-1.539229	-.735846			
12		.883969	2.866620	4.273723	4.650489	4.272091			
11		3.835148	3.112259	1.714946	1.364509	2.028946			
2	1	4 15.0							
2	1	23 9.0							
2	5	24 0.16894	0.375	0.525	0.650	0.750			
2	4	29 0.850	0.925	0.965	0.990				
2	1	86 0.0							
2	1	88 1.0							
2	1	185 12.0							
2	2	189 3.0	4.0						
2	1	200 15.0							
2	2	202 0.005	0.005						
2	1	206 1.0							
2	1	221 0.0							
2	1	223 0.0							
2	2	363 0.950	30.00						
1	-1	99 -1.0							
2	1	7 1.0							
2	2	53 1.0	1.0						
2	1	76 2.0							
2	1	975 2.0							
1	-1	99 -1.							

# APPENDIX G. G400/F389 SAMPLE OUTPUT

164

G-400/F-389 COUPLED PROGRAM

N (PROGRAM EXECUTION OPTION) = 1

← first input card

N=-2 - RUN F-389 PROGRAM ONLY

N=-1,0 - RUN G-400 PROGRAM ONLY

N>0 - RUN N CYCLES OF G-400/F-389 PROGRAM

AIRFOIL DATA READ FROM UNIT 5 IN SUBROUTINE G400PG

AIRFOIL DATA WRITTEN TO UNIT 24 IN SUBROUTINE G400PG

LOADER DATA READ FROM UNIT 5 IN SUBROUTINE NIAM

← The airfoil data would be printed out at this point if the number of CL, CD, or CM was positive.  
(see Appendix F, 2<sup>nd</sup> input card - page 150)

LOADER DATA WRITTEN TO UNIT 24 IN SUBROUTINE NIAM

PROGRAM G400PA/CORFVA - ABRIDGED PENDULAR ABSORBER VERSION OF G400 ROTOR AEROELASTIC ANALYSIS

(HUB EXCITATION AND ROTOR IMPEDANCE CALCULATOR FOR COUPLED ROTOR-FUSELAGE VIBRATION ANALYSIS)

UNITED TECHNOLOGIES RESEARCH CENTER - 1/1/81 - R. L. BIELAWA (203) 727-7154

1 OMEGA-R	FT/SEC	675.00
2 RADIUS	FT	22.000
3 RHO	SLUGS/FT**3	0.0023780
4 SPEED OF SOUND	FT/SEC	1112.00
5 NO. OF BLADES		4.0
6 E/R	NDR	0.03788
7 TIP LOSS		0.970
8 NO. OF SEG		15.0
9 INTEGRATION DELTA PSI	DEG	2.50000
10 NO. OF FLAP TRIALS		5.00000
11 FLAPPING TOLERANCE		0.00200
12 AIS	DEG	-2.500
13 BIS	DEG	5.869
14 THETA 75	DEG	8.540
15 LAMBDA		-0.03840
16 VELOCITY	KNOTS	120.00
17 SIGMA LOADED		0.07524
18 DELTA DRAG		0.0
19 1. = LOAD IN MODE SHAPES		1.0
20 N. = (CL, CM= 0.) ON FIRST N SEGMENTS		1.0
21 WITH ABOVE, CD ON FIRST N SEGMENTS		0.0
22 LINEAR TWIST	DEG	0.0
23 PRINT DELTA PSI	DEG	90.00000
24 PITCH-FLAP COUPLING (DIRECT),	DTHETA/DBETA	-0.30600
25 PITCH-LAG COUPLING,	DTHETA/DDELTA	0.05000
26 LAG DAMPER	FT-LB-SEC/RAD	0.0
27 CHORD IF CONSTANT	FEET	0.0
28 NO. OF FLATWISE MODES USED		1.0
29 NO. OF EDGEWISE MODES USED		0.0
30 NO. OF TORSIONAL MODES USED		0.0
31 FLATWISE FREQUENCIES	NDO	
2.6989 5.0579 7.8794 12.0230 0.0 0.0		
37 EDGEWISE FREQUENCIES	NDO	
4.9412 14.4354 0.0		
40 TORSIONAL FREQUENCIES	NDO	
5.2991 15.2581 0.0		
43 A2S	DEG	0.0
44 B2S	DEG	0.0
45 GRAVITY	FT/SEC**2	32.200
46 1. = USE NONSYMMETRIC AIRFOIL DATA		1.0
47 1. = OUTPUT TRANSIENT RESPONSE		0.0
48 1. = HARMONICS OF Q'S , HUB SHEARS & MOM'S		1.0
(SET TO 1.0 IF COUPLED WITH F-389 PROGRAM)		
49 GJ AT ROOT	LB-FT**2	38305.6
50 TORSIONAL ROOT SPRING	FT-LB/RAD	0.0
51 1. = SET QUADRATURE NOS. TO INPUTTED DX'S		1.0
52 1. = OUTPUT S AND AS INTEGRATION COEFS.		0.0
53 1. = LOAD INDUCED VELOCITIES		0.0
54 1. = USE INDUCED VELOCITIES		0.0

55 REQUESTED ALPHA S	DEG	0.0
56 REQUESTED LIFT	LBS	10690.0
57 REQUESTED PROPULSION FORCE	LBS	934.0
58 TOLERANCE LIFT	LBS	200.0
59 TOLERANCE PROPULSION FORCE	LBS	50.0
60 NO. OF MAJOR (TRIM) ITERATIONS		0.0
<0. = PERFORM STALL AVOIDANCE IF NEEDED		

61 PRE-CONING	DEG	0.0
---------------	-----	-----

62 REQUESTED PITCHING MOMENT	LB-FT	190.0
63 TOLERANCE PITCHING MOMENT	LB-FT	50.0
64 REQUESTED ROLLING MOMENT	LB-FT	121.0
65 TOLERANCE ROLLING MOMENT	LB-FT	50.0

66 TRIM DERIVATIVE CALCULATION OPTION		1.0
(0.= ANALYTICAL, 1.= NUMERICAL)		

67 ARTICULATED FLAP ANGLE (BETA)	RAD	0.10216
68 ARTICULATED FLAP RATE (BETA*)	RAD	-0.01300
69 ARTICULATED LAG ANGLE (DELTA)	RAD	-0.14714
70 ARTICULATED LAG RATE (DELTA*)	RAD	-0.00052

72 PRE-LEAD	DEG	0.0
-------------	-----	-----

73 1. = OUTPUT HARMONICS OF FLATWISE STRESS		1.0
74 1. = OUTPUT HARMONICS OF EDGEWISE STRESS		1.0
75 1. = OUTPUT HARMONICS OF TORSIONAL STRESS		1.0
76 1. = WRITE I.C.; 2.=READ & WRITE I.C. TO DATA FILE		1.0

77 REFERENCE BLADE AZIMUTH ANGLE	DEG	0.0
----------------------------------	-----	-----

78 EFFECTIVITY OF MOMENTUM INDUC. VEL. AT BLADE		1.00000
---	--	---------

79 GLAUERT VARIABLE INFLOW USAGE OPTION		0.0
---	--	-----

1. = USE GLAUERT INFLOW COMPONENTS (WITH OR W/O TRIM)
2. = (ABOVE) + NO CONTROL ANGLE VARIATION IN TRIM
3. = NO TRIM, SATISFY MOMENTUM EQUATIONS ONLY

80 V0	ND OMEGA-R	0.0
81 VIC	ND OMEGA-R	0.0
82 VIS	ND OMEGA-R	0.0

83 1. = TEETERED ROTOR, IF TWO-BLADED (V(5)= 2.) 0.0

84 HUB UNDERSLING DISTANCE	IN	0.0
85 LIMIT STOP ANGLE, BETA1	DEG	0.0
86 LIMIT STOP SPRING RATE	FT-LB/RAD	0.0
87 SATURATION ANGLE, BETA2	DEG	0.0
88 MOMENT AT SATURATION	FT-LB	0.0
89 SATURATION SPRING RATE	FT-LB/RAD	0.0

90-92 INTENTIONALLY BLANK

NOTE: TEETERED ROTOR OPTION REQUIRES THE FOLLOWING:

1. TWO BLADED ROTOR, V( 5) = 2.
2. TEETERED ROTOR OPTION, V(83) = 1.
3. CANTILEVER BLADE MODES, V(61),V(72) > 0.

93 SKIN FRICTION CD (FOR SKEWED FLOW EFFECTS) 0.0

94 ELASTIC (VISCOUS EQUIV.) STRUCTURAL DAMPING 0.030  
(FRACTION OF CRITICAL VISCOUS DAMPING)

95 VARIABLE INFLOW AZIMUTHAL SHAPE OPTION 0.

0. = CONTINUOUS POINT TO POINT FUNCTION

1. = STEPPED FUNCTION (SQUARE PULSES AT ORDINATES)

96 1. = USE RADIAL FLCW - SKEPT AIRFOIL OPTION 1.0

97 TOTAL NONLINEAR TWIST DEG -10.00000

98 STRESS CALCULATION OPTION 0.

0. = FORCE INTEGR., 1. = MODE DEFLECT.

99 USUAL END OF CASE CONTROL -1.0

100 DELTA X NDR  
 0.039394 0.039773 0.066288 0.066667 0.100000  
 0.100000 0.100000 0.100000 0.100000 0.045455  
 0.037879 0.056818 0.060606 0.024621 0.024621

115 MASS LB-SEC\*\*2/FT  
 0.235776 0.210839 0.194752 0.155217 0.219068  
 0.213168 0.308012 0.250062 0.252857 0.115528  
 0.099379 0.151397 0.205745 0.054354 0.019721

130 NONLINEAR TWIST ANGLE DEG  
 (AERO. AND STRUCT. OR AERO. ONLY)  
 0.165 0.861 2.277 4.081 4.000  
 3.500 2.500 1.500 0.500 -0.227  
 -0.644 -1.117 -1.705 -2.131 -2.377

145 CHORD NOT CONSTANT FT  
 0.0 0.39000 0.87000 1.24000 1.30000  
 1.30000 1.30000 1.30000 1.30000 1.30000  
 1.30000 1.29200 1.29200 1.20500 0.92300

160 FLATWISE STRESS/CURV., (EC/R)F PSI  
 26515.2 530303.0 109848.0 40530.3 34090.9  
 22727.3 20833.3 20833.3 21780.3 21780.3  
 21780.3 19886.4 19886.4 11363.6 4545.4

175 EDGEWISE STRESS/CURV., (EC/R)E PSI  
 49242.4 965909.0 795455.0 878788.0 878788.0  
 878788.0 852273.0 852273.0 946970.0 946970.0  
 852273.0 750000.0 750000.0 549242.0 227273.0

190 TORSION STRESS/MOMT. IN\*\*(-3)  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0

205 CHORDWISE RADIUS OF GYRATION NDR (KZ10)  
 0.002335 0.010022 0.011775 0.014416 0.014421  
 0.014416 0.012471 0.014639 0.015004 0.015624  
 0.014023 0.014176 0.014060 0.011802 0.022619

220 THICKNESSWISE RAD OF GYRATION NDR (KY10)  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0

235 POLAR RADIUS OF GYRA SPAR NDR  
 0.002829 0.006389 0.009921 0.010992 0.010927  
 0.010880 0.010798 0.010796 0.010953 0.011065  
 0.011625 0.012164 0.012378 0.012525 0.009100

250 DIST FROM E.A. FORM'D TO C/4 NDR  
 0.0 0.001700 0.003400 0.001000 -0.000150  
 -0.000200 -0.000100 -0.000100 -0.000100 -0.000650  
 -0.000600 -0.000600 -0.000600 -0.002000 -0.010000

265 DIST FROM E.A. FORM'D TO C.G. NDR  
 0.000400 -0.002100 -0.003600 -0.002600 -0.002600  
 -0.002700 -0.002200 0.000100 0.002700 0.002700  
 -0.000100 0.0 -0.000600 -0.007200 -0.019300



# ELASTIC (MODAL) RESPONSES FOR THE REFERENCE BLADE

280 FLATWISE MODAL RESPONSE DEFLECTIONS (QWI)

0.006719 -0.002577 -0.000322 -0.000033

286 FLATWISE MODAL RESPONSE RATES (QWI\*)

0.004315 -0.002473 0.000063 0.000084

292 EDGEWISE MODAL RESPONSE DEFLECTIONS (QVP)

0.000665 -0.000112 0.0

295 EDGEWISE MODAL RESPONSE RATES (QVP\*)

-0.001037 -0.000089 0.0

298 TORSION MODAL RESPONSE DEFLECTIONS (QTJ)

0.009570 0.0 0.0

301 TORSION MODAL RESPONSE RATES (QTJ\*)

0.014767 0.0 0.0

## ELASTIC (MODAL) RESPONSES FOR 2ND BLADE (TEETERING ROTOR)

310 FLATWISE MODAL RESPONSE DEFLECTIONS (QWI)

0.0 0.0 0.0 0.0

316 FLATWISE MODAL RESPONSE RATES (QWI\*)

0.0 0.0 0.0 0.0

322 EDGEWISE MODAL RESPONSE DEFLECTIONS (QVP)

0.0 0.0 0.0

325 EDGEWISE MODAL RESPONSE RATES (QVP\*)

0.0 0.0 0.0

328 TORSION MODAL RESPONSE DEFLECTIONS (QTJ)

0.0 0.0 0.0

331 TORSION MODAL RESPONSE RATES (QTJ\*)

0.0 0.0 0.0

355 BUILT-IN AERO. (+, AFT) SWEEP ANGLE DEG

170

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	30.000	30.000

498 LAG DAMPER BLADE ATTACHMENT SEGMENT NO.

2.

499 DAMPER ATTACH. REL. TO FEATH. BEARING OPTION

1.

0. = INBOARD, 1. = OUTBOARD

500 1. = USE TABULATED DAMPER (M VS. A\*) PROPERTIES

1.

501 NO. OF ABSCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 23.

U(A\*) = RAD/SEC, U(M) = FT-LB

	A*	M(A*)	A*	M(A*)	A*	M(A*)
502	-0.1538	-812.50	-0.1385	-801.70	-0.1277	-782.70
	-0.1185	-758.30	-0.1077	-687.90	-0.0923	-492.90
	-0.0769	-335.80	-0.0615	-205.80	-0.0462	-113.80
	-0.0308	-54.20	-0.0154	-16.30	0.0	0.0
	0.0154	16.30	0.0308	54.20	0.0462	113.80
	0.0615	205.80	0.0769	335.80	0.0923	492.90
	0.1077	687.90	0.1185	758.30	0.1277	782.70
	0.1385	801.70	0.1538	812.50	0.0	0.0

EDGEWISE NONVISCOUS STRUCTURAL DAMPING CHARACTERISTICS

(FRACTION OF CRITICAL DAMPING, = .5\*G )

554 1. = USE LOC. 94 VALUE IN NONVISCOUS FORMULATION

0.0

2. = USE DISTRIBUTION OF NONVISCOUS DAMPING

555 NONUNIFORM NONVISCOUS STRUCTURAL DAMPING DISTRIBUTION

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

600 I/C FLATWISE	IN**3				
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

615 I/C EDGEWISE	IN**3				
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

630-659 INTENTIONALLY BLANK

660 TORSION TWIST STIFFNESS, EB1, LB\*FT\*\*4

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

675 TWIST COUPLING STIFFNESS, EB2, LB\*FT\*\*3

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

690 NONLINEAR TWIST ANGLE DEG  
(STRUCTURAL, IF DIFFERENT FROM AERO.)

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

705 NONLINEAR TWIST ANGLE CHANGE PER SEGMENT LENGTH DEG  
(0 = TWIST RATES COMPUTED INTERNALLY FROM INPUTTED TWIST ANGLES)

0.331	1.062	1.770	1.780	-1.000
-1.000	-1.000	-1.000	-1.000	-0.455
-0.379	-0.568	-0.606	-0.246	-0.246

720 DIST FROM E.A. FORW'D TO N.A. NDR

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

# STIFFNESS CHARACTERISTICS OF FLEX-BEAM:

172 735 PLATE BENDING STIFFNESS, D, LB-FT  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0  
 745 BEAM TORSION STIFFNESS, GK, LB-FT\*\*2  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0  
 755 SECTION WIDTH FT  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0

## STIFFNESS CHARACTERISTICS OF TORQUE TUBE:

765 FLATWISE BENDING STIFFNESS LB-FT\*\*2  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0  
 775 EDGEWISE BENDING STIFFNESS LB-FT\*\*2  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0

## MASS CHARACTERISTICS OF TORQUE TUBE:

785 MASS LB-SEC\*\*2/FT  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0  
 795 DIST FROM E.A. FORM'D TO C.G. NDR  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0

## SECTION MODULI OF TORQUE TUBE:

805 I/C FLATWISE IN\*\*3  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0  
 815 I/C EDGEWISE IN\*\*3  
 0.0 0.0 0.0 0.0 0.0  
 0.0 0.0 0.0 0.0 0.0

## 850 TRIM PARTIAL DERIVATIVE MATRIX

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

900 NO. OF PENDULAR VIBRATION ABSORBERS ACTIVATED

0.

DATA FOR PENDULAR ABSORBER NO. 1

901 RADIAL LOCATION OF HINGE,	IN	35.000000
902 VERTICAL OFFSET OF HINGE,	IN	-1.000000
903 ARM LENGTH,	IN	4.411000
904 MASS,	LB-SEC2/FT	0.155300
905 ROTARY INERTIA ABOUT HINGE,	LB-SEC2-FT	0.023080
906 DISCRETE SPRING,	LB-FT/RAD	0.0
907 VISCOUS DAMPING COEFFICIENT,	LB-SEC-FT	0.006578
908 FRICTION MOMENT	LB-FT	0.0
909 FLAP ANGLE (BETA P),	RAD	0.0
910 FLAP RATE (BETA P*),	RAD	0.0

DATA FOR PENDULAR ABSORBER NO. 2

911 RADIAL LOCATION OF HINGE,	IN	40.000000
912 VERTICAL OFFSET OF HINGE,	IN	1.000000
913 ARM LENGTH,	IN	2.613600
914 MASS,	LB-SEC2/FT	0.093200
915 ROTARY INERTIA ABOUT HINGE,	LB-SEC2-FT	0.004863
916 DISCRETE SPRING,	LB-FT/RAD	0.0
917 VISCOUS DAMPING COEFFICIENT,	LB-SEC-FT	0.001872
918 FRICTION MOMENT	LB-FT	0.0
919 FLAP ANGLE (BETA P),	RAD	0.0
920 FLAP RATE (BETA P*),	RAD	0.0
921 INTEGRATION FREQ., ABSORBER NO. 1	NDO	2.850000
922 INTEGRATION FREQ., ABSORBER NO. 2	NDO	3.850000
923 BUILT-IN HINGE PITCH ANGLE NO. 1	DEG	0.0
924 BUILT-IN HINGE PITCH ANGLE NO. 2	DEG	0.0

INITIAL CONDITIONS FOR PENDULAR ABSORBERS ON BLADE NO. 2  
(INVOKED ONLY WITH TEETERED ROTOR OPTION, V(83) = 1.)

PENDULAR ABSORBER NO. 1 (SEE V(901) THRU V(908).)

925 FLAP ANGLE (BETA P)	RAD	0.0
926 FLAP RATE (BETA P*)	RAD	0.0

PENDULAR ABSORBER NO. 2 (SEE V(911) THRU V(918).)

927 FLAP ANGLE (BETA P)	RAD	0.0
928 FLAP RATE (BETA P*)	RAD	0.0

# DATA FOR CALCULATION OF HUB EXCITATION VECTOR AND ROTOR IMPEDANCE MATRIX

174

930 MULTIPLE OF NUMBER OF BLADES 0.0  
 (VALUE X NO. OF BLADES = VIBRATION (P) ORDER)  
 931 LINEAR HUB ACCEL. PERTURB. AMPL. FT/SEC\*\*2 0.500000  
 932 ROTARY HUB ACCEL. PERTURB. AMPL. RAD/SEC\*\*2 0.050000

NOTE... MAXIMUM HARMONIC CAPABILITY = 10

933 NO. OF BLADE STATIONS FOR INCLUSION OF VIBRATORY STRESSES WITHIN VECTOR OF VIBRATORY (LOADS) 0.  
 NOTE... MAXIMUM NO. OF STATIONS (SEGMENTS) IS (3)

934-936 SEGMENT NOS. FOR INCLUSION IN VIBR. VECTOR  
 0.0 0.0 0.0

939 1. = INCLUDE VIBRATORY PUSH-ROD LOADS IN VECTOR OF VIBRATORY (LOADS) 0.

## HIGHER HARMONIC CONTROL (HHC) PITCH ANGLES

940 A(NB-1)S DEG 0.0  
 941 B(NB-1)S DEG 0.0  
 942 A( NB )S DEG 0.0  
 943 B( NB )S DEG 0.0  
 944 A(NB+1)S DEG 0.0  
 945 B(NB+1)S DEG 0.0

946 HHC PERTURBATION AMPLITUDE DEG 0.0  
 (0. = REMOVES HHC AS DEPENDENT VARIABLES IN CALCULATION OF HUB IMPEDANCE MATRICES.)

947-956 INTENTIONALLY BLANK

957 HGT OF ROTOR ABOVE GRND OR TEST SECT FLR (FT)	0.0
958 HEIGHT OF WIND TUNNEL TEST SECTION (FT)	0.0
959 WIDTH OF WIND TUNNEL TEST SECTION (FT)	0.0
975 CASE NUMBER	1.0
976 BUILT-IN PUSH-ROD ATTACH. PITCH ANGLE (DEG)	0.0
977 PITCH HORN/CUFF INB'D BLADE ATTACH. SEG. NO.	0.0
978 PITCH HORN/CUFF OUTB'D BLADE ATTACH. SEG. NO.	0.0
979 PUSH-ROD RADIAL LOCATION (IN)	0.0
980 PUSH-ROD LOCATION FORWARD OF FEATH. AXIS (IN)	0.0
981 INNERMOST SEGMENT NO. OF FEATHERING FLEXURE	0.
982 BUILT-IN TWIST ANGLE OF FLEXURE (DEG)	0.0
983 GJ OF SPAR/FLEXURE (LB-FT <sup>2</sup> )	0.0
984 FLEXURE TORSION STRESS COEF. (IN-PSI)	0.0
985 1. = INCLUDE WOBBLE MODE (XBR CASES ONLY)	0.
986 SNUBBER STIFFNESS ALIGNMENT OPTION	0.
0. = VERT- INPLANE; 1. = TT FLAT- EDGE	
987 INB'D SNUBBER VERTICAL (FLAT) SPRING (LB/FT)	0.0
988 INB'D SNUBBER INPLANE (EDGE) SPRING (LB/FT)	0.0
989 TORQUE TUBE AXIAL LOAD RESTRAINT OPTION	0.
0. = INBOARD RESTRAINT (TT IN TENSION)	
1. = OUTBOARD RESTRAINT (TT IN COMPRESSION)	
990 INNERMOST SEGMENT NO. OF TORQUE TUBE	0.
991 1. = USE T-TUBE/F-BEAM REDUNDANT ANALYSIS	0.
992 FLAT*EDGE TORS. TERM OVER T-TUBE SPAN OPTION	0.0
0. = (EIZ-EIY)*VE''*WE''* 1.0	
1. = '' * 0.0	
2. = '' * PSEUDO-TORS. MODE	
993 FLEX-BEAM PLATE ASPECT RATIO PARAMETER	0.0
0. = INFINITE VALUE, ROD-LIKE (LINEAR) TWIST	
994 OUTB'D END TT- SPAR FLAT SPRING (FT-LB/RAD)	0.0
995 OUTB'D END TT- SPAR EDGE SPRING (FT-LB/RAD)	0.0
996 STATIC (STEADY-STATE) AIRFOIL DATA OPTION	0.
0. = INPUTTED TABULAR; 1. = ANALYTIC NACA 0012	
997 UNSTEADY AIRFOIL DATA OPTION	0.0
0. = STATIC DATA ONLY; 1. = SYNTH. UTRC DATA	
(VALUE - 1.) = NONSTD CUTOFF MACH NUMBER	
998 DELTA PSI FOR F389 DATA TRANSFERAL	15.00000
999 MODE OF DATA TRANSFER WITH PROGRAM F389	1.0
(0. = PUNCHED CARDS, 1. = DATA FILES)	

1000 1. = USE TABULATED (D) CONTROL ANGLES VS. TIME 0.

176

D THETA-75 TABLE:

1001 NO. OF ABSCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 0.

	T	F(T)	T	F(T)	T	F(T)
1002	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0

D AIS TABLE:

1051 NO. OF ABSCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 0.

	T	F(T)	T	F(T)	T	F(T)
1052	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0

D BIS TABLE:

1101 NO. OF ABSCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 0.

	T	F(T)	T	F(T)	T	F(T)
1102	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0

BLADE MODE SHAPES READ FROM UNIT 5 IN SUBROUTINE NIAM

BLADE MODE SHAPES WRITTEN TO UNIT 24 IN SUBROUTINE NIAM

TORSIONAL RETENTION SPRINGS AND EFFECTIVE FLEX-BEAM TORSIONAL STIFFNESSES

KTHETA1	KTHETA2	KTHETA3	GJ-EFF	TKA2
0.0	0.0	0.0	0.0	0.0



LINEAR AND NONLINEAR MODAL DEFLECTION VECTORS

FLATWISE MODE 1

MODAL FREQUENCY = 2.69887

PITCH-FLAT COUPLING, AW(1) = 0.56110

N	X	GW	GWP	GWPP	DVB	DV2BP	DWMBB	DW2BBP	DWNBC	DW2BCP	DWACC	DW2CCP
1	0.01970	-0.03532	-1.78702	1.03957	-0.00020	-0.00515	-0.00000	-0.00001	0.0	0.0	0.0	0.0
2	0.05928	-0.10557	-1.75724	0.14742	-0.00169	-0.02661	-0.00001	-0.00021	0.0	0.0	0.0	0.0
3	0.11231	-0.19775	-1.70572	1.10105	-0.00800	-0.06951	-0.00016	-0.00140	0.0	0.0	0.0	0.0
4	0.17879	-0.30648	-1.53452	3.51134	-0.02233	-0.12094	-0.00081	-0.00441	0.0	0.0	0.0	0.0
5	0.26212	-0.42079	-1.17569	4.63436	-0.03189	-0.12061	-0.00113	-0.00423	0.0	0.0	0.0	0.0
6	0.36212	-0.51067	-0.55541	8.25351	-0.03937	-0.11284	-0.00119	-0.00322	0.0	0.0	0.0	0.0
7	0.46212	-0.52348	0.37955	11.09248	-0.04126	-0.11089	-0.00071	-0.00129	0.0	0.0	0.0	0.0
8	0.56212	-0.42807	1.56340	12.16763	-0.04454	-0.12769	0.00001	0.00076	0.0	0.0	0.0	0.0
9	0.66212	-0.21069	2.76408	11.51697	-0.05328	-0.16555	0.00105	0.00329	0.0	0.0	0.0	0.0
10	0.73485	0.02013	3.55547	10.09451	-0.06545	-0.20576	0.00211	0.00563	0.0	0.0	0.0	0.0
11	0.77652	0.17652	3.93865	8.30104	-0.07529	-0.23307	0.00289	0.00723	0.0	0.0	0.0	0.0
12	0.82386	0.37234	4.30407	6.19764	-0.08938	-0.26716	0.00396	0.00929	0.0	0.0	0.0	0.0
13	0.88258	0.63432	4.55631	2.31075	-0.11154	-0.31282	0.00562	0.01226	0.0	0.0	0.0	0.0
14	0.92519	0.82993	4.59691	0.69185	-0.13104	-0.34689	0.00709	0.01472	0.0	0.0	0.0	0.0
15	0.94981	0.94324	4.60816	0.18414	-0.14363	-0.36666	0.00806	0.01625	0.0	0.0	0.0	0.0

QUADRATIC DEFLECTION VECTORS DUE TO TORSION MODAL TWIST (DVE(1,J), DV2EP(1,J)) AND TO FLATWISE BENDING (UWE(1,M))

		J = (1)		(2)		(3)		/ M = (1)		(2)	(3)	(4)
N	X	DVE	DV2EP	DVE	DV2EP	DVE	DV2EP	/		UWE		
1	0.01970	0.0	0.0	0.0	0.0	0.0	0.0	0.06290	0.0	0.0	0.0	0.0
2	0.05928	0.0	0.0	0.0	0.0	0.0	0.0	0.18722	0.0	0.0	0.0	0.0
3	0.11231	0.0	0.0	0.0	0.0	0.0	0.0	0.34624	0.0	0.0	0.0	0.0
4	0.17879	0.0	0.0	0.0	0.0	0.0	0.0	0.52122	0.0	0.0	0.0	0.0
5	0.26212	0.0	0.0	0.0	0.0	0.0	0.0	0.67692	0.0	0.0	0.0	0.0
6	0.36212	0.0	0.0	0.0	0.0	0.0	0.0	0.76146	0.0	0.0	0.0	0.0
7	0.46212	0.0	0.0	0.0	0.0	0.0	0.0	0.78409	0.0	0.0	0.0	0.0
8	0.56212	0.0	0.0	0.0	0.0	0.0	0.0	0.91350	0.0	0.0	0.0	0.0
9	0.66212	0.0	0.0	0.0	0.0	0.0	0.0	1.41772	0.0	0.0	0.0	0.0
10	0.73485	0.0	0.0	0.0	0.0	0.0	0.0	2.15523	0.0	0.0	0.0	0.0
11	0.77652	0.0	0.0	0.0	0.0	0.0	0.0	2.74178	0.0	0.0	0.0	0.0
12	0.82386	0.0	0.0	0.0	0.0	0.0	0.0	3.54760	0.0	0.0	0.0	0.0
13	0.88258	0.0	0.0	0.0	0.0	0.0	0.0	4.70085	0.0	0.0	0.0	0.0
14	0.92519	0.0	0.0	0.0	0.0	0.0	0.0	5.59343	0.0	0.0	0.0	0.0
15	0.94981	0.0	0.0	0.0	0.0	0.0	0.0	6.11499	0.0	0.0	0.0	0.0

## TORSION MODES

178	N	X	GT(1)	GTP(1)	GT(2)	GTP(2)	GT(3)	GTP(3)
	1	0.01970	1.00000	0.0	-0.58752	-5.13175	0.0	0.0
	2	0.05928	1.00000	0.0	-0.70266	-0.67486	0.0	0.0
	3	0.11231	1.00000	0.0	-0.76005	-1.20638	0.0	0.0
	4	0.17879	1.00000	0.0	-0.85852	-1.53923	0.0	0.0
	5	0.26212	1.00000	0.0	-0.97067	-0.73585	0.0	0.0
	6	0.36212	1.00000	0.0	-0.97200	0.88397	0.0	0.0
	7	0.46212	1.00000	0.0	-0.78328	2.86662	0.0	0.0
	8	0.56212	1.00000	0.0	-0.40815	4.27372	0.0	0.0
	9	0.66212	1.00000	0.0	0.06821	4.65049	0.0	0.0
	10	0.73485	1.00000	0.0	0.39922	4.27209	0.0	0.0
	11	0.77652	1.00000	0.0	0.56800	3.83515	0.0	0.0
	12	0.82386	1.00000	0.0	0.73949	3.11226	0.0	0.0
	13	0.88258	1.00000	0.0	0.89121	1.71495	0.0	0.0
	14	0.92519	1.00000	0.0	0.93764	1.36451	0.0	0.0
	15	0.94981	1.00000	0.0	0.98931	2.02895	0.0	0.0

## RADIAL DISTRIBUTIONS OF AERODYNAMIC AND DYNAMIC/STRUCTURAL QUANTITIES

	N	X	XCEN	CHORD	THETA-AERO	PHI	ALPHA	MACH	CL	CD	CM	KAPPA/U	(Y10C/4)/C
	1	0.01970	0.05758	0.0	9.175	-78.151	-68.977	0.040	0.0	0.0	0.0	0.0	0.0
	2	0.05928	0.09716	0.39000	9.871	-50.420	-40.550	0.050	-0.86318	1.00677	0.24912	0.13636	0.09590
	3	0.11231	0.15019	0.87000	11.287	-31.000	-19.714	0.074	-1.43717	0.24291	0.07736	0.20997	0.08598
	4	0.17879	0.21667	1.24000	13.091	-20.140	-7.049	0.110	-0.71785	0.01330	0.00726	0.23498	0.01774
	5	0.26212	0.30000	1.30000	13.010	-13.697	-0.688	0.158	0.05928	0.00937	0.00105	0.17897	-0.00254
	6	0.36212	0.40000	1.30000	12.510	-9.835	2.674	0.217	0.45287	0.00942	0.00148	0.13053	-0.00338
	7	0.46212	0.50000	1.30000	11.510	-7.736	3.773	0.277	0.59527	0.00994	0.00193	0.10219	-0.00169
	8	0.56212	0.60000	1.30000	10.510	-6.474	4.036	0.336	0.64285	0.00990	0.00458	0.08404	-0.00169
	9	0.66212	0.70000	1.30000	9.510	-5.640	3.870	0.396	0.64965	0.00959	0.00880	0.07134	-0.00169
	10	0.73485	0.77273	1.30000	8.783	-5.189	3.593	0.440	0.61966	0.00932	0.00674	0.06545	-0.01100
	11	0.77652	0.81439	1.30000	8.366	-4.967	3.398	0.465	0.48528	0.00860	0.00245	0.06183	-0.01015
	12	0.82386	0.86174	1.29200	7.893	-4.739	3.154	0.493	0.46575	0.00858	0.00172	0.05791	-0.01022
	13	0.88258	0.92045	1.29200	7.305	-4.472	2.832	0.529	0.44186	0.00874	0.00191	0.05404	-0.01022
	14	0.92519	0.96307	1.20500	6.879	-4.286	2.394	0.554	0.39532	0.00876	0.00193	0.05055	-0.03651
	15	0.94981	0.98769	0.92300	6.633	-4.185	1.485	0.569	0.27603	0.00833	0.00121	0.05190	-0.23835

	N	X	XCEN	QUAD	THETA-STR	TWIST-BLT	TWIST-TOT	TENSB	EIYB	EIZB	(Y10NA)/C	MASSB	(Y10CG)/C
	1	0.01970	0.05758	0.03939	9.175	0.14643	0.14643	0.5867	0.00221	0.00411	0.0	2.73207	0.0
	2	0.05928	0.09716	0.03977	9.871	0.46603	0.46603	0.5789	0.04427	0.08064	0.0	2.41984	-0.11846
	3	0.11231	0.15019	0.06629	11.287	0.46603	0.46603	0.5678	0.00917	0.06641	0.0	1.34112	-0.09103
	4	0.17879	0.21667	0.06667	13.091	0.46600	0.46600	0.5533	0.00338	0.07337	0.0	1.06280	-0.04613
	5	0.26212	0.30000	0.10000	13.010	-0.17453	-0.17453	0.5313	0.00285	0.07337	0.0	1.00000	-0.04400
	6	0.36212	0.40000	0.10000	12.510	-0.17453	-0.17453	0.4968	0.00190	0.07337	0.0	0.97307	-0.04539
	7	0.46212	0.50000	0.10000	11.510	-0.17453	-0.17453	0.4427	0.00174	0.07116	0.0	1.40601	-0.03723
	8	0.56212	0.60000	0.10000	10.510	-0.17453	-0.17453	0.3730	0.00174	0.07116	0.0	1.14148	0.00169
	9	0.66212	0.70000	0.10000	9.510	-0.17453	-0.17453	0.2984	0.00182	0.07906	0.0	1.15424	0.04569
	10	0.73485	0.77273	0.04545	8.783	-0.17471	-0.17471	0.2365	0.00182	0.07906	0.0	1.16020	0.04569
	11	0.77652	0.81439	0.03788	8.366	-0.17463	-0.17463	0.1975	0.00182	0.07116	0.0	1.19762	-0.00169
	12	0.82386	0.86174	0.05682	7.893	-0.17448	-0.17448	0.1496	0.00166	0.06262	0.0	1.21633	0.0
	13	0.88258	0.92045	0.06061	7.305	-0.17452	-0.17452	0.0768	0.00166	0.06262	0.0	1.54965	-0.01022
	14	0.92519	0.96307	0.02462	6.879	-0.17438	-0.17438	0.0210	0.00095	0.04586	0.0	1.00773	-0.13145
	15	0.94981	0.98769	0.02462	6.633	-0.17438	-0.17438	0.0045	0.00038	0.01897	0.0	0.36562	-0.46002

1811 Z30687

# PART II. TIME HISTORY SOLUTION OF COMPLETE (NONLINEAR) EQUATION SET - AEROELASTIC TRANSIENT RESPONSES

AIS      BIS      A2S      B2S      THETA 75      LAMBDA      MU      V0      VIC      VIS  
-2.500    5.869    0.0      0.0      8.540    -0.03340    0.300    0.0      0.0      0.0

PSI = 0.0 DEG.      REV = 4

N	X CEN	PHI	ALPHA	MACH NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-70.730	-61.473	0.041	0.0	0.0	0.0	0.0	0.0	0.0	-2.5954	2.2576	-0.3836	0.0
2	0.0972	-46.264	-36.311	0.054	-0.9181	0.8554	0.2173	-0.1758	0.0091	0.0646	-3.9298	0.9976	0.9207	0.0
3	0.1502	-29.503	-18.134	0.080	-1.5043	0.1835	0.0631	-0.9543	0.3855	-0.4554	-3.3708	0.2305	2.0526	0.0
4	0.2167	-19.805	-6.632	0.117	-0.6431	0.0129	0.0064	-1.2624	0.4135	-0.1298	-3.8346	0.3732	0.9115	0.0
5	0.3000	-13.813	-0.721	0.165	0.0556	0.0094	0.0010	0.2249	-0.0956	0.1024	-4.9898	0.3553	1.7929	0.0
6	0.4000	-10.091	2.501	0.224	0.4332	0.0094	0.0014	3.4033	-0.6665	0.0538	-6.4702	0.3242	3.0702	0.0
7	0.5000	-7.980	3.612	0.284	0.5762	0.0099	0.0020	7.3114	-1.1294	0.2671	-11.6777	0.5547	5.2519	0.0
8	0.6000	-6.647	3.945	0.344	0.6353	0.0098	0.0051	11.8689	-1.5404	1.2611	-11.3578	0.8465	-1.8041	0.0
9	0.7000	-5.731	3.861	0.404	0.6505	0.0096	0.0088	16.8081	-1.9052	3.2379	-13.3815	1.3034	-10.9209	0.0
10	0.7727	-5.226	3.639	0.448	0.6259	0.0093	0.0063	19.8872	-2.0870	-0.1552	-14.8533	1.2665	-11.9388	0.0
11	0.8144	-4.977	3.471	0.473	0.4981	0.0087	0.0023	17.6545	-1.8223	-1.4119	-16.1863	0.7185	-0.6487	0.0
12	0.8617	-4.722	3.253	0.502	0.4823	0.0087	0.0016	19.1125	-1.9011	-1.8997	-17.3961	0.7179	-1.0277	0.0
13	0.9205	-4.436	2.951	0.537	0.4624	0.0089	0.0021	21.0126	-2.0104	-1.7066	-23.6833	0.7087	2.5053	0.0
14	0.9631	-5.831	1.043	0.402	0.1562	0.0083	0.0024	3.6808	-0.5002	-0.7790	-16.1636	-0.6807	30.0406	0.0
15	0.9877	-5.659	0.641	0.417	0.0747	0.0083	0.0013	1.4429	-0.2667	-2.6573	-6.0463	-0.9967	29.8432	0.0

	QW1	QW2	QW3	QW4	QV1	QV2	QV3	QT1	QT2	QT3	BETA	DELTA	BETA-P1	BETA-P2
XI	-0.268D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.381D-02-	0.166D-020.0	0.0	0.0
Q**	-0.152D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.115D-01-	0.598D-020.0	0.0	0.0
Q*	0.187D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.497D-020.186D-020.0	0.0	0.0	0.0
Q	0.324D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.962D-01-	0.116D+000.0	0.0	0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	-0.030	0.005	0.0	1158.	2069.	0.	3227.	307.52	0.0	0.0
2	0.0972	-0.089	0.016	0.0	3663.	2194.	0.	5857.	303.08	0.0	0.0
3	0.1502	-0.166	0.033	0.0	6200.	2400.	0.	8600.	278.23	0.0	0.0
4	0.2167	-0.255	0.060	0.0	8110.	2891.	0.	11001.	249.71	0.0	0.0
5	0.3000	-0.350	0.081	0.0	8622.	2885.	0.	11507.	208.53	0.0	0.0
6	0.4000	-0.426	0.095	0.0	6883.	2139.	0.	9021.	128.18	0.0	0.0
7	0.5000	-0.438	0.090	0.0	3703.	389.	0.	4092.	-7.90	0.0	0.0
8	0.6000	-0.360	0.067	0.0	-907.	-946.	0.	1853.	-90.97	0.0	0.0
9	0.7000	-0.179	0.030	0.0	-4235.	243.	0.	4479.	31.67	0.0	0.0
10	0.7727	0.015	-0.002	0.0	-4762.	2516.	0.	7278.	234.06	0.0	0.0
11	0.8144	0.147	-0.022	0.0	-4197.	3484.	0.	7680.	327.67	0.0	0.0
12	0.8617	0.312	-0.044	0.0	-3122.	3872.	0.	6994.	363.53	0.0	0.0
13	0.9205	0.534	-0.069	0.0	-1347.	4053.	0.	5400.	379.87	0.0	0.0
14	0.9631	0.699	-0.085	0.0	-232.	2990.	0.	3222.	274.79	0.0	0.0
15	0.9877	0.795	-0.094	0.0	-21.	1013.	0.	1034.	88.93	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

180

PSI = 90.00 DEG.

REV = 4

N	X CEN	PHI	ALPHA	MACH. NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-6.536	-5.653	0.217	0.0	0.0	0.0	0.0	0.0	0.0	-1.8903	2.2599	-0.2805	0.0
2	0.0972	-5.714	-4.135	0.241	-0.3272	0.0102	0.0007	-0.9053	0.0631	-0.4096	-2.7030	0.9076	0.1448	0.0
3	0.1502	-4.834	-1.838	0.273	-0.0690	0.0087	-0.0000	-0.5504	-0.0215	-0.6444	-2.3044	0.1001	1.0148	0.0
4	0.2167	-3.976	0.823	0.313	0.2254	0.0087	-0.0004	3.3287	-0.3695	0.2024	-2.6797	0.1860	0.0535	0.0
5	0.3000	-3.205	1.513	0.363	0.3215	0.0084	0.0012	6.7191	-0.5689	-0.6847	-3.5083	0.1019	0.7327	0.0
6	0.4000	-2.494	1.724	0.423	0.3756	0.0082	0.0048	10.6881	-0.7171	0.6039	-4.5661	0.0010	1.6985	0.0
7	0.5000	-1.903	1.315	0.483	0.3338	0.0080	0.0043	12.4100	-0.7237	1.1108	-8.2811	0.0147	3.2857	0.0
8	0.6000	-1.369	0.849	0.544	0.2738	0.0080	0.0039	12.8843	-0.6902	1.3173	-8.1269	0.3705	-1.7765	0.0
9	0.7000	-0.868	0.350	0.604	0.1978	0.0081	0.0031	11.4922	-0.6446	1.1587	-9.6426	0.7919	-8.2926	0.0
10	0.7727	-0.521	-0.030	0.648	0.1637	0.0090	0.0003	10.9471	-0.6959	-3.0471	-10.6939	0.7219	-9.0099	0.0
11	0.8144	-0.329	-0.255	0.673	0.0337	0.0084	-0.0025	2.4270	-0.6188	-4.6934	-11.5712	0.1247	-0.8027	0.0
12	0.8617	-0.119	-0.518	0.702	-0.0134	0.0086	-0.0041	-1.0439	-0.6656	-6.3697	-12.4358	0.0905	-1.0590	0.0
13	0.9205	0.129	-0.858	0.737	-0.1007	0.0093	-0.0120	-8.6615	-0.8244	-16.2901	-16.9024	-0.1440	1.4947	0.0
14	0.9631	0.343	-0.987	0.652	-0.0732	0.0086	-0.0032	-4.5862	-0.4905	-1.2296	-11.3812	-1.2870	21.3759	0.0
15	0.9877	0.448	-0.735	0.667	-0.0259	0.0085	-0.0021	-1.3010	-0.3812	1.3680	-4.1576	-1.2378	21.1870	0.0

QW1 QW2 QW3 QW4 QV1 QV2 QV3 QT1 QT2 QT3 BETA DELTA BETA-P1 BETA-P2

XI	0.236D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.119D-01-	.657D-030.0	0.0
Q**	0.106D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.344D-01-	.102D-020.0	0.0
Q*	-1.06D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.402D-01-	.244D-020.0	0.0
Q	-1.124D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.693D-01-	.118D+000.0	0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	0.115	-0.002	0.0	614.	-1964.	0.	2578.	-497.78	0.0	0.0
2	0.0972	0.344	-0.009	0.0	1801.	-1693.	0.	3493.	-493.26	0.0	0.0
3	0.1502	0.643	-0.034	0.0	2632.	-1753.	0.	4385.	-492.85	0.0	0.0
4	0.2167	0.993	-0.083	0.0	2492.	-2326.	0.	4818.	-488.60	0.0	0.0
5	0.3000	1.364	-0.113	0.0	1173.	-2500.	0.	3672.	-473.64	0.0	0.0
6	0.4000	1.657	-0.122	0.0	-959.	-2626.	0.	3585.	-469.93	0.0	0.0
7	0.5000	1.702	-0.096	0.0	-3016.	-2764.	0.	5780.	-496.49	0.0	0.0
8	0.6000	1.395	-0.054	0.0	-5324.	-2331.	0.	7655.	-478.13	0.0	0.0
9	0.7000	0.690	-0.015	0.0	-6487.	177.	0.	6664.	-396.31	0.0	0.0
10	0.7727	-0.059	0.001	0.0	-5601.	2905.	0.	8506.	-326.86	0.0	0.0
11	0.8144	-0.566	0.001	0.0	-4113.	3922.	0.	8035.	-275.94	0.0	0.0
12	0.8617	-1.201	-0.008	0.0	-2316.	4221.	0.	6537.	-215.57	0.0	0.0
13	0.9205	-2.050	-0.035	0.0	-517.	4170.	0.	4687.	-46.02	0.0	0.0
14	0.9631	-2.682	-0.066	0.0	-52.	3002.	0.	3055.	68.34	0.0	0.0
15	0.9877	-3.048	-0.088	0.0	-3.	1013.	0.	1016.	25.49	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

PSI = 180.00 DEG. REV = 4

N	X CEN	PHI	ALPHA	MACH NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-16.832	-11.523	0.060	0.0	0.0	0.0	0.0	0.0	0.0	-0.3307	2.2493	-0.1458	0.0
2	0.0972	-10.953	-4.948	0.083	-0.4122	0.0112	0.0027	-0.1332	0.0238	-0.0721	-0.4488	0.7797	-1.2632	0.0
3	0.1502	-6.890	0.531	0.115	0.1835	0.0091	-0.0001	0.2523	-0.0487	-0.0177	-0.3823	-0.0413	-0.9555	0.0
4	0.2167	-4.306	4.919	0.155	0.6536	0.0098	-0.0006	2.3582	-0.2650	-0.5316	-0.4565	0.0246	-1.6385	0.0
5	0.3000	-3.018	6.125	0.205	0.8178	0.0110	-0.0006	5.4479	-0.4532	-2.0643	-0.6005	-0.0907	-1.4273	0.0
6	0.4000	-2.384	6.260	0.265	0.8690	0.0112	0.0027	9.7156	-0.6531	-2.3606	-0.7803	-0.1838	-1.1661	0.0
7	0.5000	-2.239	5.404	0.326	0.7997	0.0108	0.0053	13.4768	-0.8412	-1.8100	-1.4102	-0.1423	-0.8809	0.0
8	0.6000	-2.376	4.267	0.386	0.6940	0.0099	0.0084	16.4353	-1.0434	-0.7005	-1.3825	0.4379	-1.7918	0.0
9	0.7000	-2.634	3.009	0.446	0.5467	0.0089	0.0062	17.3147	-1.1857	-1.2955	-1.6345	1.1425	-2.8475	0.0
10	0.7727	-2.839	2.078	0.490	0.4306	0.0081	0.0041	16.4554	-1.2141	-4.7333	-1.7969	1.3089	-2.9575	0.0
11	0.8144	-2.953	1.546	0.516	0.2645	0.0084	0.0010	11.1673	-0.9369	-5.6660	-1.9205	0.8693	-1.2432	0.0
12	0.8617	-3.074	0.952	0.544	0.1945	0.0083	0.0007	9.0849	-0.9204	-5.6780	-2.0545	1.0193	-1.2540	0.0
13	0.9205	-3.181	0.258	0.580	0.1075	0.0083	-0.0001	5.6874	-0.7826	-6.0342	-2.7725	1.3145	-0.9769	0.0
14	0.9631	-3.126	-0.105	0.618	0.0549	0.0083	-0.0010	3.0626	-0.5639	-5.0072	-1.8301	-0.2164	3.0703	0.0
15	0.9877	-3.145	-0.230	0.633	0.0243	0.0083	-0.0009	1.0787	-0.3832	-3.8590	-0.6473	-0.8268	2.8802	0.0

	QW1	QW2	QW3	QW4	QV1	QV2	QV3	QT1	QT2	QT3	BETA	DELTA	BETA-P1	BETA-P2
XI	0.300D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.235D-01-.251D-030.0	0.0		0.0
Q**	0.186D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.686D-010.772D-030.0	0.0		0.0
Q*	0.161D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-.276D-020.353D-030.0	0.0		0.0
Q	-.106D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.118D-01-.121D+000.0	0.0		0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	0.099	-0.009	0.0	726.	648.	0.	1374.	-936.61	0.0	0.0
2	0.0972	0.295	-0.031	0.0	2393.	971.	0.	3364.	-928.85	0.0	0.0
3	0.1502	0.550	-0.072	0.0	3999.	989.	0.	4988.	-911.93	0.0	0.0
4	0.2167	0.847	-0.138	0.0	4978.	541.	0.	5520.	-879.62	0.0	0.0
5	0.3000	1.164	-0.187	0.0	4769.	237.	0.	5005.	-806.63	0.0	0.0
6	0.4000	1.415	-0.215	0.0	3005.	-278.	0.	3283.	-694.68	0.0	0.0
7	0.5000	1.455	-0.195	0.0	258.	-986.	0.	1244.	-571.73	0.0	0.0
8	0.6000	1.194	-0.139	0.0	-3458.	-1222.	0.	4680.	-461.11	0.0	0.0
9	0.7000	0.592	-0.058	0.0	-5727.	754.	0.	6481.	-412.14	0.0	0.0
10	0.7727	-0.050	0.004	0.0	-5283.	3217.	0.	8500.	-407.56	0.0	0.0
11	0.8144	-0.486	0.038	0.0	-4093.	4131.	0.	8225.	-372.63	0.0	0.0
12	0.8617	-1.032	0.073	0.0	-2514.	4339.	0.	6853.	-308.97	0.0	0.0
13	0.9205	-1.763	0.106	0.0	-727.	4215.	0.	4943.	-210.92	0.0	0.0
14	0.9631	-2.308	0.121	0.0	-108.	3020.	0.	3128.	-108.81	0.0	0.0
15	0.9877	-2.624	0.127	0.0	-9.	1017.	0.	1027.	-34.82	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

PSI = 270.00 DEG.

REV = 4

N	X CEN	PHI	ALPHA	MACH. NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-171.216	-157.968	0.148	0.0	0.0	0.0	0.0	0.0	0.0	-1.8186	2.4554	-0.3280	0.0
2	0.0972	-169.070	-155.126	0.125	0.6227	0.5181	0.3588	-0.5284	0.2884	0.9823	-2.8252	1.3580	0.2700	0.0
3	0.1502	-164.522	-149.162	0.094	0.5454	0.6716	0.4308	-0.6689	0.4657	3.5153	-2.4236	0.5723	1.1535	0.0
4	0.2167	-151.933	-134.769	0.058	0.3587	1.1808	0.5199	-0.4484	0.4293	3.7331	-2.7200	0.7891	0.1331	0.0
5	0.3000	-89.225	-72.143	0.031	-0.4535	1.8800	0.4598	-0.2864	0.0667	0.8992	-3.5273	0.9016	0.8027	0.0
6	0.4000	-27.875	-11.292	0.070	-0.9504	0.2135	0.0870	-0.7214	0.2143	0.6297	-4.5695	1.0144	1.7543	0.0
7	0.5000	-15.981	-0.399	0.127	0.1030	0.0093	0.0025	0.2457	-0.0991	-0.7378	-8.2428	1.7276	3.3221	0.0
8	0.6000	-11.436	3.147	0.186	0.5214	0.0098	0.0020	2.8068	-0.6552	-1.1237	-7.9989	1.8863	-1.8419	0.0
9	0.7000	-8.984	4.599	0.246	0.6927	0.0104	0.0026	6.5901	-1.2045	-1.4016	-9.4145	2.3797	-8.4087	0.0
10	0.7727	-7.778	5.078	0.290	0.7488	0.0106	0.0032	9.9273	-1.5822	-3.0013	-10.4760	2.3264	-9.1283	0.0
11	0.8144	-7.230	5.209	0.316	0.6405	0.0102	0.0052	10.0445	-1.5161	-2.4306	-11.4728	1.7827	-0.8897	0.0
12	0.8617	-6.698	5.268	0.344	0.6605	0.0101	0.0051	12.2690	-1.7201	-2.7366	-12.3444	1.7588	-1.1552	0.0
13	0.9205	-6.147	5.231	0.380	0.6725	0.0098	0.0049	15.2321	-1.9667	-3.1801	-16.8415	1.9594	1.3654	0.0
14	0.9631	-6.322	4.274	0.366	0.5093	0.0090	0.0041	9.9579	-1.1884	-4.4898	-11.5860	0.0867	21.3053	0.0
15	0.9877	-6.116	2.785	0.381	0.2291	0.0085	0.0022	3.7178	-0.4877	-7.7047	-4.3892	-0.7330	21.0939	0.0

QW1 QW2 QW3 QW4 QV1 QV2 QV3 QT1 QT2 QT3 BETA DELTA BETA-P1 BETA-P2

XI	-0.378D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.886D-020.245D-020.0	0.0	
Q**	-0.203D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.264D-010.556D-020.0	0.0	
Q*	-0.664D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.467D-01-.435D-040.0	0.0	
Q	0.802D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.682D-01-.122D+000.0	0.0	

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	-0.073	0.017	0.0	1304.	-3353.	0.	4657.	43.35	0.0	0.0
2	0.0972	-0.217	0.054	0.0	2276.	-3114.	0.	5390.	36.83	0.0	0.0
3	0.1502	-0.403	0.111	0.0	3069.	-2658.	0.	5727.	-16.63	0.0	0.0
4	0.2167	-0.618	0.191	0.0	3470.	-1693.	0.	5163.	-102.30	0.0	0.0
5	0.3000	-0.849	0.261	0.0	3459.	-1088.	0.	4547.	-173.49	0.0	0.0
6	0.4000	-1.034	0.308	0.0	3180.	-992.	0.	4172.	-250.82	0.0	0.0
7	0.5000	-1.066	0.297	0.0	2580.	-1908.	0.	4488.	-356.68	0.0	0.0
8	0.6000	-0.877	0.228	0.0	1127.	-2423.	0.	3550.	-392.74	0.0	0.0
9	0.7000	-0.436	0.105	0.0	-69.	-583.	0.	652.	-205.51	0.0	0.0
10	0.7727	0.037	-0.008	0.0	-485.	2041.	0.	2526.	56.49	0.0	0.0
11	0.8144	0.359	-0.079	0.0	-500.	3173.	0.	3672.	170.69	0.0	0.0
12	0.8617	0.763	-0.162	0.0	-401.	3721.	0.	4122.	223.27	0.0	0.0
13	0.9205	1.305	-0.263	0.0	-118.	4047.	0.	4165.	264.87	0.0	0.0
14	0.9631	1.710	-0.331	0.0	-12.	3002.	0.	3014.	197.89	0.0	0.0
15	0.9877	1.945	-0.368	0.0	-0.	1018.	0.	1018.	61.64	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

PSI = 360.00 DEG.

REV = 4

N	X CEN	PHI	ALPHA	MACH NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-70.843	-61.586	0.041	0.0	0.0	0.0	0.0	0.0	0.0	-2.5944	2.2661	-0.3837	0.0
2	0.0972	-46.327	-36.374	0.054	-0.9173	0.8577	0.2178	-0.1755	0.0089	0.0647	-3.9283	1.0051	0.9208	0.0
3	0.1502	-29.529	-18.161	0.080	-1.5031	0.1845	0.0634	-0.9518	0.3841	-0.4521	-3.3696	0.2346	2.0524	0.0
4	0.2167	-19.815	-6.643	0.117	-0.6451	0.0129	0.0064	-1.2644	0.4145	-0.1298	-3.8332	0.3764	0.9112	0.0
5	0.3000	-13.817	-0.726	0.165	0.0551	0.0094	0.0010	0.2225	-0.0950	0.1027	-4.9879	0.3582	1.7922	0.0
6	0.4000	-10.092	2.499	0.224	0.4330	0.0094	0.0014	3.3988	-0.6657	0.0543	-6.4676	0.3269	3.0691	0.0
7	0.5000	-7.980	3.611	0.284	0.5762	0.0099	0.0020	7.3058	-1.1285	0.2676	-11.6731	0.5586	5.2499	0.0
8	0.6000	-6.646	3.945	0.344	0.6353	0.0098	0.0051	11.8618	-1.5393	1.2592	-11.3534	0.0495	-1.8037	0.0
9	0.7000	-5.730	3.861	0.404	0.6506	0.0096	0.0088	16.8015	-1.9040	3.2394	-13.3762	1.3065	-10.9174	0.0
10	0.7727	-5.225	3.639	0.448	0.6260	0.0093	0.0063	19.8809	-2.0858	-0.1519	-14.6475	1.2695	-11.9348	0.0
11	0.8144	-4.976	3.472	0.473	0.4981	0.0087	0.0023	17.6488	-1.8212	-1.4092	-16.1799	0.7216	-0.6487	0.0
12	0.8617	-4.721	3.253	0.501	0.4823	0.0087	0.0016	19.1065	-1.8999	-1.8991	-17.3892	0.7210	-1.0275	0.0
13	0.9205	-4.434	2.952	0.537	0.4624	0.0089	0.0021	21.0071	-2.0092	-1.7060	-23.6740	0.7126	2.5842	0.0
14	0.9631	-5.829	1.045	0.402	0.1563	0.0083	0.0024	3.6821	-0.5001	-0.7789	-16.1573	-0.6781	30.0293	0.0
15	0.9877	-5.657	0.642	0.417	0.0747	0.0083	0.0013	1.4433	-0.2666	-2.6578	-6.0439	-0.9958	29.8320	0.0

	QW1	QW2	QW3	QW4	QV1	QV2	QV3	QT1	QT2	QT3	BETA	DELTA	BETA-P1	BETA-P2
XI	-0.267D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.381D-02-	0.164D-020.0	0.0	0.0
Q**	-0.151D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.115D-01-	0.594D-020.0	0.0	0.0
Q*	0.187D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.499D-020.185D-020.0	0.0	0.0	0.0
Q	0.324D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.962D-01-	0.117D+000.0	0.0	0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	-0.030	0.005	0.0	1162.	2038.	0.	3200.	307.70	0.0	0.0
2	0.0972	-0.089	0.016	0.0	3665.	2164.	0.	5829.	303.26	0.0	0.0
3	0.1502	-0.166	0.033	0.0	6201.	2370.	0.	8571.	278.41	0.0	0.0
4	0.2167	-0.255	0.060	0.0	8111.	2862.	0.	10973.	249.88	0.0	0.0
5	0.3000	-0.350	0.081	0.0	8622.	2859.	0.	11481.	208.72	0.0	0.0
6	0.4000	-0.425	0.095	0.0	6882.	2117.	0.	8999.	128.41	0.0	0.0
7	0.5000	-0.438	0.090	0.0	3701.	373.	0.	4074.	-7.61	0.0	0.0
8	0.6000	-0.360	0.067	0.0	-908.	-957.	0.	1866.	-90.64	0.0	0.0
9	0.7000	-0.179	0.030	0.0	-4236.	237.	0.	4473.	31.90	0.0	0.0
10	0.7727	0.015	-0.002	0.0	-4762.	2512.	0.	7274.	234.13	0.0	0.0
11	0.8144	0.147	-0.022	0.0	-4196.	3481.	0.	7678.	327.67	0.0	0.0
12	0.8617	0.312	-0.044	0.0	-3122.	3870.	0.	6992.	363.51	0.0	0.0
13	0.9205	0.533	-0.069	0.0	-1347.	4053.	0.	5399.	379.84	0.0	0.0
14	0.9631	0.699	-0.085	0.0	-232.	2990.	0.	3222.	274.77	0.0	0.0
15	0.9877	0.794	-0.094	0.0	-21.	1013.	0.	1034.	83.93	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

## AERODYNAMIC PERFORMANCE AND STRESSES

	H. FORCE	Y. FORCE	THRUST	ROLL. MOM.	PITCH. MOM.	TORQUE	LIFT	PROP. FORCE	HORSEPOWER	EQU. DRAG
C( )	-0.00011654	-0.00001549	0.00410033	-0.00001955	-0.00004844	0.00028853	0.00406632	0.00053973		
C( )/SIG	-0.00154893	-0.00020590	0.05449887	-0.00025979	-0.00064386	0.00383493	0.05404686	0.00717376		
DIMENS.	-191.99	-25.52	6755.13	-708.41	-1755.75	10457.47	6699.10	889.19	583.37	685.48

A1S	B1S	A2S	B2S	THETA 75	LAMBDA	MU	VEL ACT.	EQU. L/D	PAR. AREA	ALPHA S
-2.500	5.869	0.0	0.0	8.540	-0.03840	0.300	120.64	9.773	13.886	-5.933

N	X CEN	/ MEDIAN STRESSES /		/ 1/2 PTP STRESSES /		/ MAX CORNER / STRESSES	/ TORSION MOMENTS /	
		FLATWISE	EDGEWISE	FLATWISE	EDGEWISE		MEDIAN	1/2 PEP
1	0.0576	468.	1077.	1582.	8461.	10366.	-316.	807.94
2	0.0972	2349.	1341.	2047.	8140.	11003.	-313.	801.37
3	0.1502	4197.	1357.	2580.	7962.	12828.	-318.	786.27
4	0.2167	5206.	1059.	3270.	8144.	14422.	-318.	753.82
5	0.3000	4623.	899.	4119.	7744.	14771.	-297.	678.20
6	0.4000	2676.	454.	4206.	6709.	12807.	-282.	562.36
7	0.5000	412.	-429.	3831.	4978.	8691.	-313.	410.30
8	0.6000	-1962.	-889.	3838.	3132.	9779.	-330.	292.89
9	0.7000	-3408.	872.	3745.	1570.	7851.	-219.	275.75
10	0.7727	-3195.	3019.	3030.	990.	8928.	-90.	381.27
11	0.8144	-2499.	3873.	2291.	705.	8633.	-23.	414.18
12	0.8617	-1632.	4128.	1491.	407.	7193.	28.	400.42
13	0.9205	-634.	4147.	713.	106.	5430.	102.	346.15
14	0.9631	-102.	3008.	131.	21.	3230.	105.	224.62
15	0.9877	-9.	1016.	12.	8.	1038.	36.	72.01

PUSH-ROD LOAD (MEDIAN, 1/2 PTP: 0.0 0.0



# HARMONIC ANALYSIS OF BLADE RESPONSES

	A0	1	2	3	4	5	6	7	8	9	10
BETA	6.134D-02	-4.246D-02	7.378D-03	3.022D-04	-5.926D-05	-1.511D-05	-7.759D-07	-1.671D-07	-9.390D-07	-7.486D-07	-8.929D-07
	-1.157D-04	1.776D-03	4.144D-04	7.842D-05	-9.421D-06	-5.050D-06	-1.848D-06	-1.291D-06	-1.065D-06	-1.143D-06	
	4.246D-02	7.589D-03	5.129D-04	9.829D-05	1.780D-05	5.109D-06	1.855D-06	1.596D-06	1.302D-06	1.450D-06	
	269.8	76.5	36.1	-37.1	238.1	188.7	185.2	216.0	215.1	218.0	
	1.000	0.179	0.012	0.002	0.000	0.000	0.000	0.000	0.000	0.000	
LEAD	-1.194D-01	-1.785D-03	-6.977D-04	-1.989D-04	-3.485D-05	-1.284D-05	-7.584D-06	-1.314D-05	-1.163D-05	-1.302D-05	-1.237D-05
	-1.498D-03	-6.649D-04	1.592D-04	-3.994D-05	-3.291D-05	-2.225D-05	-2.060D-05	-1.628D-05	-1.324D-05	-1.122D-05	
	2.330D-03	9.638D-04	2.548D-04	5.300D-05	3.533D-05	2.351D-05	2.443D-05	2.001D-05	1.857D-05	1.670D-05	
	230.0	226.4	-51.3	221.1	201.3	198.8	212.5	215.5	224.5	227.8	
	1.000	0.414	0.109	0.023	0.015	0.010	0.010	0.009	0.008	0.007	
QW1	-3.031D-03	-5.700D-03	7.610D-04	-1.240D-03	-9.947D-05	2.576D-07	4.708D-06	-9.708D-07	5.168D-07	-5.134D-07	2.662D-07
	9.472D-03	-4.403D-03	-7.370D-04	-5.078D-05	-2.300D-05	-2.393D-07	-5.454D-07	-4.041D-07	2.390D-08	-4.693D-07	
	1.105D-02	4.468D-03	1.442D-03	1.117D-04	2.300D-05	4.714D-06	1.113D-06	6.561D-07	5.140D-07	5.396D-07	
	-31.0	170.2	239.3	243.0	179.4	92.9	240.7	128.0	-87.3	150.4	
	1.000	0.404	0.130	0.010	0.002	0.000	0.000	0.000	0.000	0.000	

## HARMONIC ANALYSIS OF HUB SHEARS AND MOMENTS

186

	A0	1	2	3	4	5	6	7	8	9	10
LONG. SHR	-20.	-26352. -3132. 26537.	46. 88. 99.	-47. 17. 50.	11. 28. 30.	5. 9. 10.	-0. 2. 2.	1. -1. 2.	-2. -0. 2.	-0. -1. 1.	-1. -1. 1.
		263.22 1.00	27.63 0.00	-69.91 0.00	21.90 0.00	27.75 0.00	-15.99 0.00	146.41 0.00	261.42 0.00	208.41 0.00	218.57 0.00
LAT. SHR	-8.	3163. -26347. 26536.	-105. 51. 116.	-19. -39. 43.	-32. 11. 33.	-7. 4. 9.	-2. -3. 4.	3. -0. 3.	-0. -2. 2.	2. -1. 2.	-1. 0. 1.
		173.16 1.00	-64.08 0.00	206.01 0.00	-71.54 0.00	-59.77 0.00	221.29 0.00	97.13 0.00	183.19 0.00	113.15 0.00	-69.26 0.00
VERT. SHR	1597.61	-829.41 -436.66 937.34 242.23 1.00	212.63 300.77 368.34 35.26 0.39	81.19 37.25 89.33 65.35 0.10	7.13 9.69 12.03 36.35 0.01	0.54 1.24 1.35 23.34 0.00	-0.92 -0.17 0.93 259.38 0.00	0.10 0.24 0.26 23.35 0.00	-0.40 0.37 0.55 -47.10 0.00	-0.01 0.07 0.07 -7.13 0.00	-0.41 0.29 0.50 -54.66 0.00
ROLL MOMT	242.	117. -1359. 1364. 175.09 1.00	191. -405. 448. 154.74 0.33	-106. 67. 125. -57.96 0.09	-5. 18. 18. -17.05 0.01	-4. -4. 6. 222.64 0.00	-2. 2. 2. -46.57 0.00	-2. 0. 2. -84.70 0.00	-2. 1. 2. -67.96 0.00	-2. 0. 2. -76.82 0.00	-1. -1. 1. 212.96 0.00
PITCH MOMT	-344.	1156. -152. 1166. 97.48 1.00	301. 156. 339. 62.63 0.29	-89. -112. 143. 218.47 0.12	-16. -7. 17. 247.85 0.01	5. -2. 6. 108.91 0.00	0. -0. 0. 164.95 0.00	2. -0. 2. 100.57 0.00	-1. -1. 1. 231.46 0.00	-0. -1. 1. 199.79 0.00	-1. -1. 1. 242.43 0.00
YAW MOMT	-3100.	-88. 408. 418. -12.22 0.90	-254. -121. 282. 244.56 0.61	-87. 456. 464. -10.76 1.00	13. 112. 113. 6.68 0.24	-38. -10. 39. 255.13 0.08	46. 16. 49. 70.97 0.11	1. -31. 31. 178.99 0.07	32. -10. 34. 107.03 0.07	4. 1. 4. 77.75 0.01	26. 1. 26. 88.71 0.06

HARMONIC ANALYSIS OF FLATWISE STRESSES

N	X CEN	A0	1	2	3	4	5	6	7	8	9	10
1	0.0576	552.	-274. -438. 516. 212.0 0.614	123. -257. 285. 154.4 0.339	171. -823. 840. 168.2 1.000	-312. -267. 411. 229.5 0.489	-16. -25. 30. 212.7 0.036	-65. -42. 77. 237.3 0.092	-32. 48. 57. -33.5 0.068	-26. 13. 29. -63.8 0.035	-12. 2. 12. -81.5 0.014	-26. 10. 28. -68.5 0.033
2	0.0972	2102.	-535. -469. 711. 228.7 0.934	-391. -654. 761. 210.9 1.000	10. -746. 746. 179.2 0.980	-352. -298. 462. 229.7 0.606	-23. -23. 32. 224.8 0.043	-61. -43. 74. 234.8 0.098	-31. 45. 54. -35.1 0.072	-26. 8. 27. -72.6 0.035	-12. -0. 12. 269.3 0.016	-24. 6. 25. -75.7 0.032
3	0.1502	3503.	-814. -375. 897. 245.2 0.597	-1025. -1097. 1501. 223.1 1.000	-168. -625. 647. 195.0 0.431	-396. -327. 514. 230.5 0.342	-38. -12. 40. 252.6 0.027	-61. -41. 74. 236.3 0.049	-34. 43. 55. -39.0 0.037	-29. 4. 29. -82.5 0.019	-14. -3. 14. 256.4 0.009	-24. 2. 24. -86.3 0.016
4	0.2167	4288.	-1084. 104. 1089. -84.5 0.485	-1692. -1477. 2246. 222.9 1.000	-359. -396. 534. 222.2 0.238	-402. -304. 504. 232.9 0.224	-55. 15. 57. -75.0 0.025	-55. -16. 57. 253.4 0.025	-32. 47. 57. -34.9 0.025	-32. 9. 34. -74.2 0.015	-13. -1. 13. 264.6 0.006	-26. 2. 26. -86.3 0.012
5	0.3000	4151.	-1293. 1160. 1737. -48.1 0.635	-2146. -1694. 2734. 231.7 1.000	-553. 19. 554. -88.0 0.202	-308. -184. 359. 239.1 0.131	-41. 24. 47. -59.3 0.017	-21. 10. 23. -63.9 0.009	-12. 32. 34. -20.0 0.012	-19. -1. 19. 267.8 0.007	-8. -6. 10. 235.4 0.004	-16. -6. 17. 248.8 0.006
6	0.4000	2839.	-1268. 2340. 2662. -28.5 1.000	-1906. -1558. 2462. 230.7 0.925	-640. 259. 690. -68.0 0.259	-169. -67. 182. 248.3 0.068	-2. 3. 4. -28.4 0.001	-3. 7. 8. -23.0 0.003	-13. 15. 20. -39.7 0.007	-9. 2. 9. -78.6 0.003	-3. -3. 4. 218.5 0.002	-4. -6. 7. 211.3 0.003
7	0.5000	836.	-1064. 3045. 3225. -19.3 1.000	-1109. -1312. 1718. 220.2 0.533	-653. 235. 694. -70.2 0.215	-49. 4. 49. -85.5 0.015	7. -3. 8. 114.1 0.002	6. 1. 6. 77.8 0.002	-9. 3. 9. -69.0 0.003	-0. -1. 1. 184.3 0.000	-1. 0. 1. -89.1 0.000	3. -3. 4. 129.7 0.001
8	0.6000	-2060.	-805. 3349. 3445. -13.5 1.000	14. -988. 988. 179.2 0.287	-472. 117. 487. -76.0 0.141	63. 81. 102. 37.7 0.030	-4. -8. 8. 204.8 0.002	20. 4. 20. 79.7 0.006	-2. -4. 4. 204.4 0.001	8. 2. 8. 77.0 0.002	-2. 3. 4. -27.1 0.001	5. 1. 5. 73.8 0.001
9	0.7000	-4005.	-508. 3173. 3214. -9.1 1.000	832. -833. 1177. 135.0 0.366	-272. -40. 275. 261.5 0.086	101. 115. 153. 41.4 0.048	1. -25. 25. 178.8 0.008	12. -3. 12. 103.4 0.004	18. -21. 28. 139.7 0.009	12. 2. 12. 81.6 0.004	3. 3. 4. 42.2 0.001	5. 3. 6. 61.9 0.002

188

10	0.7727	-3936.	-144.	988.	-143.	84.	-8.	-4.	16.	3.	10.	3.
			2457.	-716.	-101.	101.	-14.	-15.	-17.	-9.	-1.	3.
			2461.	1220.	176.	132.	16.	16.	23.	9.	10.	4.
			-3.4	125.9	234.7	39.8	208.8	194.4	137.1	159.7	94.4	43.5
			1.000	0.496	0.071	0.054	0.006	0.006	0.010	0.004	0.004	0.002
11	0.8144	-3168.	120.	923.	-88.	50.	-8.	-7.	13.	1.	9.	2.
			1741.	-599.	-64.	74.	-9.	-16.	-13.	-8.	-1.	3.
			1745.	1100.	109.	89.	12.	17.	19.	8.	9.	4.
			4.0	123.0	233.7	33.8	222.6	204.5	134.8	171.3	95.1	27.8
			1.000	0.630	0.062	0.051	0.007	0.010	0.011	0.005	0.005	0.002
12	0.8617	-2071.	338.	735.	-42.	13.	-7.	-7.	8.	0.	6.	1.
			958.	-438.	3.	42.	-4.	-12.	-7.	-6.	0.	3.
			1016.	855.	42.	44.	8.	14.	11.	6.	6.	3.
			19.4	120.8	-86.2	17.4	236.0	209.3	131.1	176.8	86.9	10.8
			1.000	0.842	0.042	0.043	0.008	0.013	0.011	0.006	0.006	0.003
13	0.9205	-688.	319.	361.	-13.	-12.	-1.	-2.	2.	1.	1.	0.
			257.	-215.	56.	7.	-3.	-3.	-2.	-2.	1.	-0.
			410.	420.	58.	14.	3.	4.	2.	3.	2.	0.
			51.1	120.7	-12.6	-60.9	190.2	211.3	133.7	151.9	39.2	104.8
			0.975	1.000	0.137	0.034	0.008	0.009	0.006	0.006	0.004	0.000
14	0.9631	-104.	65.	69.	-3.	-4.	0.	-0.	-0.	0.	0.	-0.
			33.	-41.	13.	0.	-1.	-0.	-0.	-1.	0.	-0.
			73.	81.	13.	4.	1.	0.	0.	1.	0.	0.
			62.8	121.0	-11.8	-84.3	171.9	211.4	206.7	148.1	20.2	196.3
			0.901	1.000	0.160	0.046	0.009	0.005	0.002	0.009	0.005	0.001
15	0.9877	-9.	6.	7.	-0.	-0.	0.	-0.	-0.	0.	0.	-0.
			3.	-4.	1.	0.	-0.	-0.	-0.	-0.	0.	-0.
			7.	8.	1.	0.	0.	0.	0.	0.	0.	0.
			65.3	120.3	-12.9	-84.5	171.0	210.8	242.5	151.1	24.1	205.0
			0.857	1.000	0.149	0.046	0.008	0.005	0.003	0.011	0.006	0.002

## PUSH-ROD LOAD

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

# LOADER DATA READ FROM UNIT 5 IN SUBROUTINE DATAIN

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## LOAD1 CARD INPUT

	COLUMN	2	4	6	19	31	43	55	67
	*	*	*	*	*	*	*	*	*
1	4	0.1500D+02	0.0	0.0	0.0	0.0	0.0	0	
1	23	0.9000D+01	0.0	0.0	0.0	0.0	0.0	0	
5	24	0.1689D+00	0.3750D+00	0.5250D+00	0.6500D+00	0.7500D+00	0		
4	29	0.8500D+00	0.9250D+00	0.9650D+00	0.9900D+00	0.0	0		
1	86	0.0	0.0	0.0	0.0	0.0	0		
1	88	0.1000D+01	0.0	0.0	0.0	0.0	0		
1	185	0.1200D+02	0.0	0.0	0.0	0.0	0		
2	189	0.3000D+01	0.4000D+01	0.0	0.0	0.0	0		
1	200	0.1500D+02	0.0	0.0	0.0	0.0	0		
2	202	0.5000D-02	0.5000D-02	0.0	0.0	0.0	0		
1	206	0.1000D+01	0.0	0.0	0.0	0.0	0		
1	221	0.0	0.0	0.0	0.0	0.0	0		
1	223	0.0	0.0	0.0	0.0	0.0	0		
2	363	0.9500D+00	0.3000D+02	0.0	0.0	0.0	0		
-1	99	-0.1000D+01	0.0	0.0	0.0	0.0	0		

← { F389 PROGRAM  
LOADER DATA

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DATA WILL BE READ FROM UNIT 16  
DATA READ FROM UNIT 16

1061

UTRC. PRESCRIBED WAKE ROTOR INFLOW ANALYSIS  
 ( SINGLE ROTOR VERSION )  
 UNITED TECHNOLOGIES RESEARCH CENTER  
 EAST HARTFORD, CONNECTICUT  
 1980 UPDATED VERSION  
 CHIEF AEROMECHANICS ANTON J. LANDGREBE EXT. 7358  
 RESEARCH ENGINEER T. ALAN EGOLF EXT. 7188

THIS PROGRAM COMPUTES THE INDUCED EFFECT ON THE ROTOR BLADES OF A  
 PRESCRIBED ROTOR WAKE. THE INPUT FLIGHT CONDITION, BLADE MOTION, CONTROL  
 PARAMETERS, AND A WAKE AXIAL VELOCITY ARE USED IN THE PROGRAM TO DEFINE  
 THE WAKE GEOMETRY AND CIRCULATION STRENGTHS. HOWEVER THE WAKE GEOMETRY  
 CAN BE INPUT. THE FINAL OUTPUT OF THE PROGRAM IS THE ROTOR INDUCED  
 VELOCITY DISTRIBUTION IN FORMS COMPATIBLE WITH INPUT REQUIREMENTS OF  
 COMMONLY USED BLADE RESPONSE PROGRAMS.

CONVENTIONAL NASA SIGN CONVENTIONS ARE USED (REFERENCE-GEISSOW AND MEYERS)  
 EXCEPT FOR THE INDUCED VELOCITY WHICH IS DEFINED AS POSITIVE UPFLOW.

THE TIP PATH PLANE AXIS SYSTEM IS USED IN THE ANALYSIS. HOWEVER,  
 TRANSFORMATION EQUATIONS ARE INCLUDED IN THE PROGRAM FOR SHAFT AXIS  
 INPUT VALUES.

\*\*\* INPUT \*\*\*

LOC	NAME	BRIEF DESCRIPTION,(UNITS)					VALUE
1	V	FORWARD FLIGHT VELOCITY,(KNTS)					120.00000
2	OMGR	ROTOR TIP SPEED,(FPS)					675.00000
3	SOUND	SPEED OF SOUND,(FPS)					1112.00000
4	DPSI	AZIMUTHAL INCREMENT,(DEGREES)					15.00000
		(MINIMUM = 15 DEGREES)					
5	R	ROTOR RADIUS,(FEET)					22.00000
6	B	NUMBER OF BLADES,(NDN)					4.00000
7	C	BLADE ELEMENT CHORD,(FEET)					
		0.97435	1.30000	1.30000	1.30000	1.30000	
		1.29398	1.28271	1.18289	0.92300	0.0	
		0.0	0.0	0.0	0.0	0.0	
22	E	BLADE HINGE OFFSET/R,(NDN)					0.03788
23	STNS	NUMBER OF BLADE ELEMENT STATIONS FOR INFLOW SOLUTION,(NDN) (MAXIMUM = 15)					9.00000
24	RS	BLADE ELEMENT RADIAL STATIONS/R,(NDN)					
		0.16894	0.37500	0.52500	0.65000	0.75000	
		0.85000	0.92500	0.96500	0.99000	0.0	
		0.0	0.0	0.0	0.0	0.0	
39	STNEW	NUMBER OF BLADE ELEMENT STATIONS FOR INTERPOLATION OF INFLOW SOLUTION,(NDN)					15.00000
40	RSNEW	BLADE ELEMENT RADIAL STATIONS/R FOR INTERPOLATION OF INFLOW SOLUTION,(NDN)					
		0.05758	0.09716	0.15019	0.21667	0.30000	
		0.40000	0.50000	0.60000	0.70000	0.77273	
		0.81439	0.86174	0.92045	0.96307	0.98769	
		0.0	0.0	0.0	0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	
65	VIMOM	MOMENTUM INDUCED VELOCITY, POSITIVE UPFLOW,					

	(FPS)				-4.61000
66	ALPHAS	ROTOR SHAFT ANGLE, REFERENCED TO V POSITIVE NOSE UP, (DEGREES)			-5.93280
67	THET75	COLLECTIVE PITCH AT 75% RADIUS, (DEGREES)			8.54000
68	THETA1	BLADE LINEAR TWIST, POSITIVE WHEN TIP GREATER THAN THE ROOT, (DEGREES)			0.0
69	DTHETA	NON-LINEAR BLADE ELEMENT TWIST, (DEGREES)			
		2.78580 3.62500 2.25000 1.00000 0.00021			
		-0.99972 -1.75048 -2.15028 -2.37700 0.0			
		0.0 0.0 0.0 0.0 0.0			
84	AISP	FIRST COSINE HARMONIC OF CYCLIC PITCH NEG. FOURIER SERIES, (DEGREES)			-2.50000
85	BISP	FIRST SINE HARMONIC OF CYCLIC PITCH NEG. FOURIER SERIES, (DEGREES)			5.86900
86	DELPSI	BLADE PHASE ANGLE FROM ZERO PSI, POSITIVE IN DIRECTION OF ROTATION, (DEGREES)			0.0
87	DELTA	BLADE LAG ANGLE, (DEGREES)			6.83960
88	XLINK	INTERNAL LINKAGE CONTROL WITH G-400 0 = NO LINKAGE 1 = WITH LINKAGE			1.00000
89	GWKOP	CONTROLS INPUT OF GMC WHEN LOC.(186)=2. 0,1=DO NOT USE, 2=INTERNAL(NEW), 3=CARDS(NEW)			0.0
90	CTCOEF	CT FOR GENERALIZED WAKE COEF. DEFINITION IF ZERO, CT IS DEFINED FROM VIMOM, MU, ETC.			0.0
92	YDIST	Y DISTORTIONS, 0=NO, 1=YES			0.0
100	PLTCON	OPTION FOR CONTOUR PLOTS, 0=YES, 1=NO			0.0
163	AFMAX	NUMBER OF BLADE FLAPPING HARMONICS MAXIMUM OF 10, (NDN)			6.00000
164	A0	BLADE CONING ANGLE, (DEGREES)			3.51460
165	AFL	COSINE HARMONIC COEFFICIENT OF FLAPPING - MAXIMUM OF 10-NEGATIVE FOURIER SERIES (DEGREES)			
		-2.43290 0.42274 0.01732 -0.00340 -0.00087			
		-0.00004 0.0 0.0 0.0 0.0			
175	BFL	SINE HARMONIC COEFFICIENT OF FLAPPING - MAXIMUM OF 10-NEGATIVE FOURIER SERIES (DEGREES)			
		-0.00663 0.10176 0.02374 0.00449 -0.00054			
		-0.00029 0.0 0.0 0.0 0.0			
185	XNH	NUMBER OF HARMONICS OF INDUCED VELOCITY FOR PRINTOUT AND PUNCH - NOT GREATER THAN 180/DPSI, (NDN)			12.00000
186	TYWAKE	TYPE OF WAKE, (NDN) 1=CLASSICAL UNDISTORTED WAKE 2=GENERALIZED WAKE 3=PRESCRIBED TIP VORTEX COORDINATES 4=WAKE COORDINATES FROM TAPE			0.0
187	RUN	TAPE FILE NUMBER FOR WAKE GEOMETRY LOCATION ON TAPE, (NDN) (=1 IF TYWAKE=1,2,3)			0.0
188	TSTEP	WAKE TIME STEP TO START USING WAKE GEOMETRY FROM TAPE, (NDN) (USE ONLY IF TYWAKE=4)			0.0
189	REV	NUMBER OF WAKE REVOLUTIONS, (NDN) (FUNCTION OF ADVANCE RATIO)			3.00000
190	ROLLUP	NUMBER OF FILAMENTS IN ROLLED UP TIP FILAMENT, (NDN) (0,1 FOR NO ROLLUP)			4.00000
191	ANDTIP	OPTION INDICATOR FOR ANHEDRAL TIP 0=NO, 1=LINEAR DROOP, 2=INPUT COORD. - ZANDTP			0.0

192	DROOP	LINEAR DROOP ANGLE FOR ANHEDRAL TIP - POSITIVE DROOP DOWN,(DEGREES)	0.0
193	RBEND	RADIAL POSITION OF BEGINNING OF DROOP/R MUST HAVE VALUE SUCH THAT THERE ARE NO MORE THAN 5 STATIONS ON THE DROOPED SECTION,(NDN)	0.0
194	RATIOV	RATIO OF DESIRED TIP INFLOW TO INFLOW OF WAKE - IF ZERO INPUT,SET = 1.0,(NDN)	1.00000
195	ZANDTP	AXIAL COORDINATES OF DROOP STATIONS/R,(NDN) MAXIMUM OF 5, USED IF ANDTIP = 2	
		0.0      0.0      0.0      0.0      0.0	
200	TRUNC	AZIMUTH INCREMENT FROM BLADE FOR TIP VORTEX ROLLUP,(DEGREES),0=NO ROLLUP (TRUNC/DPSI MUST BE AN INTEGER)	15.00000
201	TRUNCI	INBOARD WAKE TRUNCATION ANGLE,(DEGREES) 0=NO TRUNCATION	0.0
202	RCORE	TIP VORTEX FILAMENT CORE RADIUS/R,(NDN)	0.00500
203	RCOREI	INBOARD WAKE CORE RADIUS/R,(NDN)	0.00500
204	DEL3	PITCH-FLAP COUPLING,(NDN)	0.31177
205	TOL	MATRIX SOLUTION TOLERANCE,(NDN) DEFAULT VALUE OF .0005	0.0
206	WIOPT	NON-INDUCED AXIAL VELOCITY (W1) OPTION 0=INTERNAL PROGRAM CALCULATIONS 1=CARDS/FILE INPUT FROM ANOTHER PROGRAM	1.00000
207	WOPT	LINEARIZED AERODYNAMICS INPUT OPTION,(NDN) 0=NO,1=YES	0.0
208	OPTPO	GEOMETRIC COEF. (GC) PRINT OPTION,(NDN) 0=NO PRINT,1=PRINT GC	0.0
209	PRINT	MATRIX SOLUTION PRINT OPTION,(NDN) 0=NO PRINT 1=PRINTS COEF + SOLUTION FOR EACH ITERATION 2=PRINTS SOLUTIONS ONLY FOR EACH ITERATION	0.0
210	PUNCH	(NDN), 0=NO PUNCH,1=PUNCH HARMONICS ONLY 2=PUNCH VELOCITIES ONLY,3=PUNCH BOTH (MINUS INDICATES ONLY AXIAL COMPONENT)	0.0
211	CPOPT	WAKE COORDINATES PRINT OPTION,(NDN) 0=NO PRINT 1=ALL WAKE COORDINATES 2=TIP FILAMENT COORDINATES ONLY	0.0
212	CROPT	PRINT OPTION FOR WAKE-ELEMENT POINT COMBINATIONS WITHIN CORE RADIUS,(NDN) 0=NO PRINT,1=PRINT	0.0
213	CPUNCH	PUNCHES CIRCULATIONS FOR F506 - A DISTORTING WAKE PROGRAM (NDN) 0=NO,1=YES (NO PUNCHED OUTPUT IF LOC. 224=1)	0.0
217	OPVIBC	OPTION TO USE INPUT AXIAL VELOCITIES (NDN) 0=NO, 1=YES (USE ALL 3 COMPONENTS), 2=YES (USE AXIAL COMPONENT ONLY)	0.0
218	SKEWFO	OPTION FOR SKEW FLOW,0=NO,1=YES(NO STALL) 2=YES(WITH STALL)	0.0
219	VIROTR	OPTION TO INCLUDE RADIAL AND/OR TANGENTIAL INDUCED VELOCITIES IN SOLUTION (LOC. 293=1.0) 0=NO,1=YES(BOTH),2=YES(RAD),3=YES(TANG)	0.0
220	OPLINK	OPTION NOT PRESENTLY USED	0.0
221	DEBUGP	INTERMEDIATE PRINT OPTION,(NDN) USED FOR DEBUGGING,0=NO,1=YES	0.0
222	OPCORE	VORTEX CORE OPTION,(NDN) 0=SOLID BODY ROTATION,1=TRUNCATION	0.0
223	GRPLNK	OPTION FOR GRP LINK,(NDN) (NOT PRESENTLY USED)	0.0
224	FPOPT	OPTION FOR FIELD POINT MODE (NDN)	



		0=NO, 1=YES (FPOPT OR MODE)	0.0
225	TAILVI	OPTION FOR TAIL INDUCED VELOCITIES	
		0=NO, 1=YES (ALSO PUNCHES OUT VI'S)	0.0
226	FPHARM	OPTION FOR FIELD POINT HARMONICS	
		0=NO, 1=YES, 2=PUNCH	0.0
227	HARMOP	OPTION FOR HARMONIC ANALYSIS OF	
		INDUCED VELOCITIES BASED ON HPSI,(NDN)	
		0=NO, 1=YES	0.0
228	HPSI	DELTA PSI TO BE USED WHEN LOC 227=1 (DEG)	
		(5 DEGREES MINIMUM)	0.0
293	SOLVE	OPTION FOR SOLUTION TYPE,(NDN)	
		0=LINEAR,1=NONLINEAR	0.0
294	GCSAVE	OPTION TO SAVE GEOMETRIC COEFF. (NDN)	
		(NOT USED FOR THIS VERSION OF F-389)	
		0=DO NOT SAVE,1=SAVE,2=READ FROM PREVIOUS CYC	0.0
295	RELAXF	RELAXATION FACTOR USED IN NONLINEAR SOLUTIONS	
		IF SOLVE=1,DEFAULT=.7;IF SOLVE=0,DEFAULT=1	1.00000
296	XGAMAX	FRACTION OF ALPHA MAX FOR NONLINEAR	
		SOLUTION(SOLVE=1),DEFAULT =1.0	1.00000
297	AUTORF	OPTION FOR AUTO RELAXATION FACTOR,0=YES,1=NO	0.0
363	RSWEPT	RADIAL POSITION/R WHERE SWEEP BEGINS (NDN)	
		0=NO SWEEP	0.95000
364	ASWEPT	SWEEP ANGLE, +AFT (DEG)	30.00000
365	OPTHET	OPTION FOR VARIABLE BLADE PITCH (NDN)	
		0=NO,1=YES,(NEGATIVE HARMONIC FORM)	0.0
366	THICK	THICKNESS DISTRIBUTION,NDN	
		0.16894 0.37500 0.52500 0.65000 0.75000	
		0.85000 0.92500 0.96500 0.98769 0.0	
		0.0 0.0 0.0 0.0 0.0	
381	UNSTED	UNSTEADY AERO OPTION,(NDN)	
		(NOT PRESENTLY USED)	0.0
382	SAVGAM	OPTION TO SAVE CIRC. FOR NEXT ITERATION	
		1=SAVE,2=READ & SAVE,3=READ FROM GRP & SAVE	0.0
385	COURSE	OPTION FOR COURSE WAKE GRID	
		0=NO, X=NUMBER OF DPSI AWAY FROM BLADE	0.0
400	CASENM	CASE NUMBER,(NDN)	0.0
99		END OF CASE CONTROL,(NDN)	
		-1=NO MORE CASES FOLLOW	
		1=GET ANOTHER CASE	-1.00000
* THIS VECTOR IS INTERPOLATED FROM G400 AIRFOIL DATA			

LINEARIZED AIRFOIL DATA WILL BE READ FROM UNIT 23

LINEARIZED AIRFOIL DATA READ FROM UNIT 23

LIFT CURVE SLOPE					STALL ANGLE					ANGLE OF ZERO LIFT				
10.0000	10.0000	10.0000	10.0000	0.0	10.0000	10.0000	10.0000	10.0000	0.0	10.0000	10.0000	10.0000	10.0000	0.0
0.2273	0.4545	0.8143	0.8144	0.0	0.2273	0.4545	0.8143	0.8144	0.0	0.2273	0.4545	0.8143	0.8144	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.0590	6.7609	6.7609	6.5151	0.0	15.4280	11.6950	11.6950	10.2790	0.0	-1.2151	-1.2712	-1.2712	-0.3617	0.0
0.3000	0.4000	0.4000	0.4000	0.0	0.3000	0.4000	0.4000	0.4000	0.0	0.3000	0.4000	0.4000	0.4000	0.0
6.3169	7.1142	7.1142	7.0187	0.0	14.7620	9.0134	9.0134	9.4612	0.0	-1.2018	-1.3758	-1.3758	-0.3347	0.0
0.4000	0.5000	0.5000	0.5000	0.0	0.4000	0.5000	0.5000	0.5000	0.0	0.4000	0.5000	0.5000	0.5000	0.0
6.7035	7.2922	7.2922	7.4786	0.0	9.6752	7.4143	7.4143	7.9919	0.0	-1.1795	-1.3071	-1.3071	-0.4355	0.0
0.5000	0.6000	0.6000	0.6000	0.0	0.5000	0.6000	0.6000	0.6000	0.0	0.5000	0.6000	0.6000	0.6000	0.0
7.2193	9.0241	9.0241	8.1946	0.0	6.3651	5.9206	5.9206	7.0976	0.0	-1.1746	-0.8730	-0.8730	-0.5236	0.0
0.6000	0.7000	0.7000	0.7000	0.0	0.6000	0.7000	0.7000	0.7000	0.0	0.6000	0.7000	0.7000	0.7000	0.0
8.1217	10.6000	10.6000	9.6687	0.0	3.8272	4.2162	4.2162	5.6593	0.0	-1.1111	-1.0811	-1.0811	-0.4444	0.0
0.7000	0.7500	0.7500	0.7500	0.0	0.7000	0.7500	0.7500	0.7500	0.0	0.7000	0.7500	0.7500	0.7500	0.0
9.1620	12.6390	12.6390	11.8170	0.0	3.9344	3.2133	3.2133	4.1909	0.0	-1.1200	-1.0933	-1.0933	-0.3182	0.0

IBM Z36687

0.7500	0.8000	0.8000	0.8000	0.0	0.7500	0.8000	0.8000	0.8000	0.0	0.7500	0.8000	0.8000	0.8000	0.0
8.7734	8.5944	8.5944	8.5944	0.0	3.7633	5.3333	5.3333	5.3333	0.0	-1.2000	-0.3333	-0.3333	-0.3333	0.0
0.8000	0.8500	0.8500	0.8500	0.0	0.8000	0.8500	0.8500	0.8500	0.0	0.8000	0.8500	0.8500	0.8500	0.0
7.8304	7.4485	7.4485	7.4485	0.0	4.1220	6.7692	6.7692	6.7692	0.0	-1.0000	0.2308	0.2308	0.2308	0.0
0.9000	0.9000	0.9000	0.9000	0.0	0.9000	0.9000	0.9000	0.9000	0.0	0.9000	0.9000	0.9000	0.9000	0.0
7.2526	5.9206	5.9206	5.9206	0.0	5.2760	8.8387	8.8387	8.8387	0.0	0.2200	1.0000	1.0000	1.0000	0.0
0.9500	0.9500	0.9500	0.9500	0.0	0.9500	0.9500	0.9500	0.9500	0.0	0.9500	0.9500	0.9500	0.9500	0.0
7.2526	6.4458	6.4458	6.4458	0.0	5.2760	7.6000	7.6000	7.6000	0.0	0.2200	0.4000	0.4000	0.4000	0.0

\*\*\*\* INTERMEDIATE OUTPUT \*\*\*\*

ADVANCE\_RATIO (TPP) = 0.2969  
 INFLOW\_RATIO (TPP) = -0.0505  
 TIP PATH PLANE ANGLE OF ATTACK = -8.37 DEG.  
 WAKE SKEW ANGLE = 9.65 DEG.

BLADE STATIONS	1	2	3	4	5	6	7	8	9
THETA	11.326	12.165	10.790	9.540	8.540	7.540	6.790	6.390	6.163

THIS IS THE LAST CASE FOR THIS RUN.

SUBROUTINE DISWAK HAS BEEN CALLED FOR WAKE INPUT FOR ROTOR POSITION 1  
 TAPE OR DISK WILL BE REWOUND  
 TAPE OR DISK HAS BEEN REWOUND

RUN NUMBER IDENTIFICATION FROM TAPE OR DISK - WAKE COORDINATES COMPUTED IN CLASWK

WAKE INPUT

X Y Z DIMENSIONED ( 40, 79)

POINT NUMBERS FOR TIP FILAMENT OF BLADE 1 AT ROTOR POSITION 1 1 TO 73

TAPE RUN NUMBER FOR WAKE COORDINATES = 1

TAPE FILE NUMBER FOR WAKE COORDINATES FOR TIME STEP = 0

COORDINATES WILL NOT BE PRINTED

SUBROUTINE DISWAK HAS BEEN CALLED FOR WAKE INPUT FOR ROTOR POSITION	2
SUBROUTINE DISWAK HAS BEEN CALLED FOR WAKE INPUT FOR ROTOR POSITION	3
SUBROUTINE DISWAK HAS BEEN CALLED FOR WAKE INPUT FOR ROTOR POSITION	4
SUBROUTINE DISWAK HAS BEEN CALLED FOR WAKE INPUT FOR ROTOR POSITION	5
SUBROUTINE DISWAK HAS BEEN CALLED FOR WAKE INPUT FOR ROTOR POSITION	6

48 WAKE-ELEMENT-BLADE POINT COMBINATIONS WITHIN CORE RADII OF WAKE

RELATIVE CHANGE IN SUM OF SOLUTION VECTORS = 0.3148382D+00

RELATIVE CHANGE IN SUM OF SOLUTION VECTORS = 0.4502662D-01

RELATIVE CHANGE IN SUM OF SOLUTION VECTORS = 0.8451207D-02

RELATIVE CHANGE IN SUM OF SOLUTION VECTORS = 0.1435284D-02

RELATIVE CHANGE IN SUM OF SOLUTION VECTORS = 0.2518861D-03

CIRCULATIONS HAVE CONVERGED WITH A RELATIVE CHANGE IN SUM OF THE SOLUTION VECTORS OF 0.000252  
 THE DESIRED VALUE WAS 0.000500  
 NUMBER OF ITERATIONS = 5

BLADE CIRCULATION DISTRIBUTION (FSQ/SEC)  
BLADE RADIAL STATION

PSI	1 0.169	2 0.375	3 0.525	4 0.650	5 0.750	6 0.850	7 0.925	8 0.965	9 0.990
0.	44.2451	123.2497	194.0718	230.7740	239.6939	225.9931	191.2283	140.2103	111.5773
15.	15.5606	131.6114	197.2009	219.4569	215.9860	187.8091	155.1858	109.2974	85.8876
30.	-3.7190	111.8841	165.8876	162.3659	158.2731	125.2471	98.8343	64.3037	48.3949
45.	39.3556	117.8923	116.0355	119.6328	119.8086	87.6766	65.8453	42.2816	31.1750
60.	15.4609	87.8431	106.6267	114.2074	112.0843	77.4650	60.7513	47.0698	37.4870
75.	37.6503	88.8335	112.8298	121.6392	124.5588	94.9171	78.2146	62.1371	48.7652
90.	74.7761	127.2489	150.6109	160.2535	158.3532	115.8487	86.7864	82.7448	73.4556
105.	59.4596	155.3153	180.9774	191.2906	196.6668	132.2476	143.1382	117.2178	89.6811
120.	49.4569	178.7440	213.3446	232.1525	196.5007	195.2775	141.3850	107.2952	78.5570
135.	86.7803	209.7718	256.4178	231.9712	267.7370	187.7703	129.4789	97.0625	69.5858
150.	87.9584	238.5218	263.0335	248.8556	262.3031	179.8038	124.7055	93.7790	66.7260
165.	103.0506	236.5025	253.0285	301.1082	256.3482	181.6222	129.0358	99.1299	70.4590
180.	102.9722	242.3965	255.3531	298.5878	256.7764	190.3233	139.6775	111.1954	79.6075
195.	73.2733	224.4688	287.3982	300.6039	267.1874	204.7245	156.3199	128.7824	93.0861
210.	29.8230	176.7666	247.6906	293.2156	273.6541	219.7474	174.2317	146.9562	107.3646
225.	-8.9935	131.9630	210.5641	278.4321	274.9202	231.6844	191.3122	163.1340	120.5649
240.	-40.5541	94.8401	179.2285	249.3526	270.5121	241.1231	204.9980	175.2773	131.6142
255.	52.4396	68.3858	156.5791	228.2453	264.2012	247.4665	216.0136	183.0093	139.8277
270.	73.9463	41.2845	115.0799	196.7118	250.9134	252.3444	226.7420	190.0339	147.8396
285.	73.4886	26.8911	97.5950	155.2436	202.0676	231.2494	226.0510	190.4634	152.5369
300.	61.3629	35.7910	107.1058	161.3918	197.5166	201.9845	188.4239	153.1448	126.8334
315.	38.3939	64.7302	134.7087	187.8351	222.3196	219.3254	197.5607	152.2396	122.5175
330.	6.1527	80.5278	169.5216	221.8188	253.0934	241.1980	212.6135	160.0676	127.7778
345.	5.3470	96.3969	202.0398	250.7959	276.1663	259.5342	225.5813	168.8380	134.8168

\*\*\*\*\*

... BLADE CIRCULATION ...  
MIN < SYMBOL < MAX

180

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MIN  =-.4055D+02 MAX   =0.3011D+03
MEAN =0.1509D+03 SIGMA =0.7488D+02
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IBM Z39637

# ROTOR INDUCED VELOCITY DISTRIBUTION - FT/SEC

## RADIAL COMPONENT BLADE RADIAL STATION

	1	2	3	4	5	6	7	8	9
PSI	0.169	0.375	0.525	0.650	0.750	0.850	0.925	0.965	0.990
0.	2.525	5.976	4.183	7.243	10.071	11.041	11.028	9.833	9.898
15.	8.869	7.375	8.477	11.541	11.608	11.210	9.978	8.506	8.526
30.	8.846	7.136	11.844	11.242	9.462	7.239	6.146	4.979	4.962
45.	8.761	11.441	8.848	6.197	2.904	0.546	-1.781	-3.434	-3.986
60.	7.069	14.866	2.400	-2.456	-5.013	-9.429	-13.630	-15.099	-15.174
75.	2.397	1.507	-4.404	-8.528	-13.085	-19.275	-18.038	-19.440	-20.738
90.	4.933	-1.353	-11.986	-14.287	-15.844	-16.209	-23.123	-28.453	-25.925
105.	23.170	-9.718	-11.745	-22.247	-13.014	-24.280	-16.044	-9.247	-7.101
120.	-2.057	-10.282	-15.581	-11.670	-18.620	-13.065	-4.656	-3.332	-2.807
135.	-6.178	-15.810	-17.510	-12.506	-20.670	-4.357	-2.234	-1.788	-1.570
150.	-8.697	-14.764	-9.108	-28.894	-6.703	-2.295	-1.416	-1.197	-1.068
165.	-13.802	-13.773	-11.714	-13.752	-3.340	-1.566	-1.055	-0.915	-0.816
180.	-9.715	-11.058	-24.186	-6.655	-2.319	-1.244	-0.864	-0.745	-0.647
195.	-8.561	-8.032	-24.723	-4.684	-1.939	-1.105	-0.764	-0.631	-0.510
210.	-7.346	-8.070	-18.360	-3.981	-1.832	-1.070	-0.716	-0.544	-0.376
225.	-6.548	-8.347	-14.624	-4.192	-1.967	-1.138	-0.727	-0.507	-0.270
240.	-7.374	-6.786	-13.357	-5.070	-2.439	-1.373	-0.848	-0.582	-0.254
255.	-11.631	-4.420	-9.399	-7.261	-3.727	-2.005	-1.223	-0.908	-0.462
270.	-6.637	-1.822	-4.056	-7.916	-6.662	-3.960	-2.407	-1.853	-1.174
285.	-2.928	0.522	-0.175	-2.358	-5.369	-8.064	-6.680	-5.232	-3.705
300.	-0.335	2.350	2.403	1.467	0.252	-1.850	-4.525	-7.040	-7.975
315.	3.858	3.424	4.049	3.790	3.912	3.800	3.068	1.491	0.770
330.	5.591	0.691	4.797	4.851	5.664	6.950	7.617	6.803	6.753
345.	5.664	1.854	4.044	5.809	6.745	8.218	9.734	9.073	9.171

## TANGENTIAL COMPONENT BLADE RADIAL STATION

	1	2	3	4	5	6	7	8	9
PSI	0.169	0.375	0.525	0.650	0.750	0.850	0.925	0.965	0.990
0.	-20.094	-6.315	-9.380	-9.772	-9.584	-9.286	-8.944	-7.283	-7.077
15.	-33.049	-13.517	-10.560	-13.201	-12.495	-10.712	-9.492	-7.834	-7.924
30.	-10.067	-6.506	-9.127	-7.945	-5.359	-2.331	-0.699	0.636	0.356
45.	-2.895	-6.730	-2.137	2.205	5.294	7.694	9.351	10.545	10.605
60.	-3.915	-3.142	6.158	9.409	10.676	12.705	14.150	14.866	14.759
75.	4.156	5.044	8.911	10.750	11.893	12.511	11.737	11.872	11.796
90.	6.015	7.596	9.485	8.122	8.849	7.564	7.266	8.029	7.436
105.	0.570	6.336	6.291	7.320	3.929	4.370	3.457	2.567	2.076
120.	4.201	3.846	4.165	2.030	1.774	1.766	1.020	0.938	0.776
135.	2.953	3.115	0.800	0.195	0.681	0.430	0.385	0.410	0.332
150.	1.472	-0.875	-0.867	-3.214	-0.424	0.037	0.114	0.171	0.120
165.	-0.290	-3.854	-3.146	-3.241	-0.589	-0.177	-0.061	0.025	-0.021
180.	-2.742	-4.549	-8.519	-2.199	-0.791	-0.380	-0.226	-0.107	-0.165
195.	-4.571	-4.894	-14.030	-2.354	-1.087	-0.599	-0.407	-0.255	-0.343
210.	-4.664	-6.391	-12.296	-2.866	-1.512	-0.902	-0.658	-0.463	-0.602
225.	-1.990	-8.830	-14.092	-3.907	-2.129	-1.318	-1.022	-0.751	-0.947

240.	11.147	-10.074	-16.271	-5.903	-3.180	-1.945	-1.511	-1.112	-1.357
255.	29.808	-9.348	-18.057	-11.076	-5.565	-3.129	-2.319	-1.646	-1.877
270.	8.856	-8.187	-14.673	-17.581	-12.535	-6.620	-4.305	-2.933	-2.915
285.	-0.642	-6.884	-10.810	-13.302	-16.244	-16.249	-11.943	-8.259	-6.853
300.	-3.358	-5.267	-8.497	-8.945	-9.823	-11.366	-13.457	-14.394	-15.725
315.	-4.868	-4.313	-6.608	-6.002	-6.141	-7.042	-8.413	-8.343	-9.381
330.	-4.081	-6.730	-5.755	-4.673	-4.377	-4.487	-5.009	-4.266	-5.030
345.	-5.706	-6.951	-6.704	-5.369	-5.184	-5.035	-4.994	-3.532	-3.634

AXIAL COMPONENT  
BLADE RADIAL STATION

	1	2	3	4	5	6	7	8	9
PSI	0.169	0.375	0.525	0.650	0.750	0.850	0.925	0.965	0.990
0.	13.839	-5.099	-5.353	-4.849	-6.543	-10.702	-15.885	-0.976	-0.256
15.	-5.376	-11.634	-11.702	-13.957	-18.046	-18.450	-22.903	-8.712	-8.510
30.	-16.735	-17.538	-16.670	-22.012	-25.832	-25.036	-27.604	-17.066	-17.341
45.	-5.453	-16.610	-24.775	-26.186	-28.349	-25.258	-26.016	-19.299	-19.301
60.	-15.531	-24.203	-24.924	-24.712	-25.218	-20.468	-19.523	-14.994	-13.934
75.	-10.994	-26.190	-23.746	-22.268	-20.613	-12.820	-11.147	-8.591	-7.169
90.	-2.511	-21.401	-18.043	-16.391	-14.801	-7.156	-6.708	-2.445	1.345
105.	-11.758	-19.733	-15.243	-12.973	-9.445	-4.002	2.456	5.105	6.454
120.	-19.192	-18.993	-12.499	-7.822	-10.838	5.646	2.480	3.705	4.823
135.	-10.179	-15.649	-7.287	-9.634	-0.121	3.290	0.431	1.455	2.604
150.	-11.025	-11.021	-9.052	-6.678	-1.954	0.162	-2.118	-1.124	-0.127
165.	-4.449	-10.998	-12.947	1.383	-3.552	-2.108	-4.577	-4.205	-3.254
180.	0.465	-6.844	-12.553	-1.454	-5.332	-4.180	-7.057	-8.008	-7.244
195.	3.010	-5.059	-2.125	-2.139	-6.716	-5.698	-9.636	-12.192	-11.767
210.	8.643	-5.259	7.618	-2.647	-7.487	-7.175	-12.259	-16.092	-16.173
225.	16.796	-2.833	8.566	-1.194	-7.085	-7.861	-14.585	-18.864	-19.458
240.	25.868	0.435	6.240	2.633	-5.702	-7.995	-15.870	-19.845	-20.986
255.	3.297	2.943	0.201	3.725	-3.501	-7.074	-16.114	-18.491	-19.897
270.	-10.996	2.983	-4.686	-3.516	-3.449	-5.819	-15.416	-15.466	-16.610
285.	-6.460	2.512	-6.293	-11.157	-13.495	-11.008	-16.634	-12.268	-12.511
300.	-5.660	2.430	-6.579	-12.111	-16.588	-19.090	-25.823	-17.486	-16.638
315.	-4.301	2.651	-6.578	-11.394	-15.144	-17.089	-24.319	-13.355	-13.289
330.	0.836	-2.720	-6.490	-9.678	-12.376	-13.297	-20.700	-6.885	-6.599
345.	8.782	-8.281	-5.998	-7.590	-9.543	-9.470	-16.046	-0.295	0.494

...AXIAL COMPONENT  
MIN < SYMBOL < MAX

[illegible]

```
MIN  =-.2835D+02 MAX   =0.2587D+02
MEAN =-.9162D+01 SIGMA =0.9164D+01      IBM Z390687
```

ROTOR CL = 0.7042D-02

200

EFFECTIVE BLADE ELEMENT ANGLE OF ATTACK - DEGREES

IN SKEW PLANE BUT NOT COLLAPSED

BLADE RADIAL STATION

PSI	1 0.169	2 0.375	3 0.525	4 0.650	5 0.750	6 0.850	7 0.925	8 0.965	9 0.990
0.	8.777	-1.281	-0.933	-0.673	-0.781	-1.120	-1.523	-0.127	-0.032
15.	-2.165	-2.373	-1.757	-1.717	-1.940	-1.762	-2.017	-1.025	-0.973
30.	-4.958	-3.029	-2.209	-2.442	-2.535	-2.204	-2.255	-1.818	-1.798
45.	-1.312	-2.525	-2.970	-2.670	-2.581	-2.078	-1.996	-1.872	-1.827
60.	-3.233	-3.349	-2.774	-2.364	-2.169	-1.599	-1.427	-1.339	-1.217
75.	-0.093	-3.411	-2.516	-2.042	-1.707	-0.968	-0.789	-0.717	-0.586
90.	-0.458	-2.707	-1.867	-1.472	-1.202	-0.531	-0.467	-0.193	0.104
105.	-2.149	-2.499	-1.578	-1.166	-0.768	-0.297	0.171	0.390	0.483
120.	-3.670	-2.482	-1.328	-0.719	-0.899	0.427	0.176	0.278	0.355
135.	-2.140	-2.178	-0.814	-0.925	-0.010	0.258	0.032	0.109	0.192
150.	-2.688	-1.689	-1.092	-0.684	-0.179	0.013	-0.163	-0.086	-0.010
165.	-1.349	-1.920	-1.727	0.154	-0.350	-0.186	-0.375	-0.333	-0.253
180.	0.193	-1.415	-1.900	-0.180	-0.576	-0.401	-0.624	-0.670	-0.593
195.	2.018	-1.291	-0.374	-0.299	-0.806	-0.599	-0.927	-1.093	-1.031
210.	13.957	-1.733	1.586	-0.422	-1.005	-0.831	-1.288	-1.568	-1.537
225.	121.983	-1.262	2.135	-0.218	-1.064	-1.003	-1.672	-2.018	-2.027
240.	151.319	0.272	1.853	0.544	-0.948	-1.112	-1.965	-2.346	-2.408
255.	177.418	2.562	0.069	0.850	-0.630	-1.050	-2.115	-2.413	-2.513
270.	-172.731	3.249	-1.748	-0.847	-0.648	-0.895	-2.087	-2.205	-2.286
285.	-175.688	2.715	-2.341	-2.684	-2.531	-1.692	-2.252	-1.872	-1.838
300.	-175.476	2.077	-2.244	-2.752	-2.975	-2.828	-3.383	-2.766	-2.530
315.	-174.512	1.620	-1.937	-2.342	-2.508	-2.370	-3.004	-2.111	-2.020
330.	172.959	-1.187	-1.602	-1.754	-1.850	-1.691	-2.367	-1.048	-0.967
345.	12.795	-2.677	-1.237	-1.202	-1.274	-1.093	-1.682	-0.042	0.068



EFFECTIVE ANGLE ATTACK  
MIN < SYMBOL < MAX

-175.7 < = < -52.6

-52.6 < A < -39.8

-39.8 < . < -27.0

-27.0 < B < -14.2

-14.2 < + < -1.3

-1.3 < C < 11.5

11.5 < , < 24.3

24.3 < D < 37.1

37.1 < > < 49.9

49.9 < E < 177.4

MIN = -175.7D+03 MAX = 0.1774D+03  
MEAN = -1346D+01 SIGMA = 0.3204D+02

IBM Z30687

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STALL INDICATOR TABLE --- 99.99 = STALLED, 0.0 = NO STALL  
BLADE RADIAL STATION

PSI	1 0.169	2 0.375	3 0.525	4 0.650	5 0.750	6 0.850	7 0.925	8 0.965	9 0.990
0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
195.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330.	99.990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROTOR INDUCED VELOCITY DISTRIBUTION - FT/SEC

NORMALIZED BY - VIMOM  
BLADE RADIAL STATION

PSI	1 0.169	2 0.375	3 0.525	4 0.650	5 0.750	6 0.850	7 0.925	8 0.965	9 0.990
0.	3.002	-1.106	-1.161	-1.052	-1.419	-2.321	-3.446	-0.212	-0.055
15.	-1.166	-2.524	-2.538	-3.027	-3.914	-4.002	-4.968	-1.890	-1.846
30.	-3.630	-3.804	-3.616	-4.775	-5.604	-5.431	-5.988	-3.702	-3.762
45.	-1.183	-3.603	-5.374	-5.680	-6.149	-5.479	-5.643	-4.186	-4.187
60.	-3.369	-5.250	-5.407	-5.360	-5.470	-4.440	-4.235	-3.253	-3.022
75.	-2.385	-5.681	-5.151	-4.830	-4.471	-2.781	-2.418	-1.864	-1.555
90.	-0.545	-4.642	-3.914	-3.556	-3.211	-1.552	-1.455	-0.530	0.292
105.	-2.551	-4.280	-3.306	-2.814	-2.049	-0.868	0.533	1.107	1.400
120.	-4.163	-4.120	-2.711	-1.697	-2.351	1.225	0.538	0.804	1.046
135.	-2.208	-3.395	-1.581	-2.090	-0.026	0.714	0.094	0.316	0.565
150.	-2.392	-2.391	-1.964	-1.448	-0.424	0.035	-0.459	-0.244	-0.028
165.	-0.965	-2.386	-2.808	0.300	-0.771	-0.457	-0.993	-0.912	-0.706
180.	0.101	-1.485	-2.723	-0.315	-1.157	-0.907	-1.531	-1.737	-1.571
195.	0.653	-1.097	-0.461	-0.464	-1.457	-1.236	-2.090	-2.645	-2.552
210.	1.875	-1.141	1.652	-0.574	-1.624	-1.556	-2.659	-3.491	-3.508
225.	3.643	-0.614	1.858	-0.259	-1.537	-1.705	-3.164	-4.092	-4.221

240.	5.611	0.094	1.354	0.571	-1.237	-1.734	-3.443	-4.305	-4.552
255.	0.715	0.638	0.044	0.808	-0.759	-1.535	-3.496	-4.011	-4.316
270.	-2.385	0.647	-1.016	-0.763	-0.748	-1.262	-3.344	-3.355	-3.603
285.	-1.401	0.545	-1.365	-2.420	-2.927	-2.388	-3.608	-2.661	-2.714
300.	-1.228	0.527	-1.427	-2.627	-3.598	-4.141	-5.601	-3.793	-3.609
315.	-0.933	0.575	-1.427	-2.472	-3.285	-3.707	-5.275	-2.897	-2.883
330.	0.192	-0.590	-1.408	-2.099	-2.685	-2.884	-4.490	-1.494	-1.431
345.	1.905	-1.796	-1.301	-1.647	-2.070	-2.054	-3.481	-0.064	0.107

HARMONICS OF INFLOW WILL BE SENT TO G400 VIA UNIT 14

HARMONICS OF INDUCED VELOCITY  
FT/SEC POSITIVE UPFLOW NORMAL TO SHAFT AXIS PLANE  
RADIAL

I N T E R P O L A T E D

HARMONICS FOR STATION 1 WRITTEN ON UNIT 14

HARMONICS FOR STATION 2 WRITTEN ON UNIT 14

HARMONICS FOR STATION 3 WRITTEN ON UNIT 14

HARMONICS FOR STATION 4 WRITTEN ON UNIT 14

HARMONICS FOR STATION 5 WRITTEN ON UNIT 14

HARMONICS FOR STATION 6 WRITTEN ON UNIT 14

HARMONICS FOR STATION 7 WRITTEN ON UNIT 14

HARMONICS FOR STATION 8 WRITTEN ON UNIT 14

HARMONICS FOR STATION 9 WRITTEN ON UNIT 14

HARMONICS FOR STATION 10 WRITTEN ON UNIT 14

HARMONICS FOR STATION 11 WRITTEN ON UNIT 14

HARMONICS FOR STATION 12 WRITTEN ON UNIT 14

HARMONICS FOR STATION 13 WRITTEN ON UNIT 14

HARMONICS FOR STATION 14 WRITTEN ON UNIT 14

HARMONICS FOR STATION 15 WRITTEN ON UNIT 14

HARMONICS OF INFLOW WILL BE SENT TO G400 VIA UNIT 14

HARMONICS OF INDUCED VELOCITY  
FT/SEC POSITIVE UPFLOW NORMAL TO SHAFT AXIS PLANE  
TANGENTIAL

I N T E R P O L A T E D

IBM Z30687

HARMONICS FOR STATION 1 WRITTEN ON UNIT 14

HARMONICS FOR STATION 2 WRITTEN ON UNIT 14

HARMONICS FOR STATION 3 WRITTEN ON UNIT 14

HARMONICS FOR STATION 4 WRITTEN ON UNIT 14

HARMONICS FOR STATION 5 WRITTEN ON UNIT 14

HARMONICS FOR STATION 6 WRITTEN ON UNIT 14

HARMONICS FOR STATION 7 WRITTEN ON UNIT 14

HARMONICS FOR STATION 8 WRITTEN ON UNIT 14

HARMONICS FOR STATION 9 WRITTEN ON UNIT 14

HARMONICS FOR STATION 10 WRITTEN ON UNIT 14

HARMONICS FOR STATION 11 WRITTEN ON UNIT 14

HARMONICS FOR STATION 12 WRITTEN ON UNIT 14

HARMONICS FOR STATION 13 WRITTEN ON UNIT 14

HARMONICS FOR STATION 14 WRITTEN ON UNIT 14

HARMONICS FOR STATION 15 WRITTEN ON UNIT 14

HARMONICS OF INFLOW WILL BE SENT TO G400 VIA UNIT 14

HARMONICS OF INDUCED VELOCITY  
FT/SEC POSITIVE UPFLOW NORMAL TO SHAFT AXIS PLANE  
AXIAL

# INTERPOLATED

HARMONICS FOR STATION 1 WRITTEN ON UNIT 14

HARMONICS FOR STATION 2 WRITTEN ON UNIT 14

HARMONICS FOR STATION 3 WRITTEN ON UNIT 14

HARMONICS FOR STATION 4 WRITTEN ON UNIT 14

HARMONICS FOR STATION 5 WRITTEN ON UNIT 14

HARMONICS FOR STATION 6 WRITTEN ON UNIT 14

HARMONICS FOR STATION 7 WRITTEN ON UNIT 14

HARMONICS FOR STATION 8 WRITTEN ON UNIT 14

HARMONICS FOR STATION 9 WRITTEN ON UNIT 14

HARMONICS FOR STATION 10 WRITTEN ON UNIT 14

HARMONICS FOR STATION 11 WRITTEN ON UNIT 14

HARMONICS FOR STATION 12 WRITTEN ON UNIT 14

HARMONICS FOR STATION 13 WRITTEN ON UNIT 14

HARMONICS FOR STATION 14 WRITTEN ON UNIT 14

HARMONICS FOR STATION 15 WRITTEN ON UNIT 14

AIRFOIL DATA READ FROM UNIT 24 IN SUBROUTINE G400PG

LOADER DATA READ FROM UNIT 24 IN SUBROUTINE NIAM

← { ADDITIONAL 6900 INPUT IS READ  
AT THIS POINT.  
LOCATIONS 7, 53, 54, 76, AND 975 ARE NEW.

PROGRAM G400PA/CORFVA - ABRIDGED PENDULAR ABSORBER VERSION OF G400 ROTOR AEROELASTIC ANALYSIS

(HUB EXCITATION AND ROTOR IMPEDANCE CALCULATOR FOR COUPLED ROTOR-FUSELAGE VIBRATION ANALYSIS)

UNITED TECHNOLOGIES RESEARCH CENTER - 1/1/81 - R. L. BIELAWA (203) 727-7154

206

1 OMEGA-R	FT/SEC	675.00
2 RADIUS	FT	22.000
3 RHO	SLUGS/FT**3	0.0023780
4 SPEED OF SOUND	FT/SEC	1112.00
5 NO. OF BLADES		4.0
6 E/R	NDR	0.03788
7 TIP LOSS		1.000
8 NO. OF SEG		15.0
9 INTEGRATION DELTA PSI	DEG	2.50000
10 NO. OF FLAP TRIALS		5.00000
11 FLAPPING TOLERANCE		0.00200
12 AIS	DEG	-2.500
13 BIS	DEG	5.869
14 THETA 75	DEG	8.540
15 LAMBDA		-0.03840
16 VELOCITY	KNOTS	120.00
17 SIGMA LOADED		0.07524
18 DELTA DRAG		0.0
19 1. = LOAD IN MODE SHAPES		1.0
20 N. = (CL,CH= 0.) ON FIRST N SEGMENTS		1.0
21 WITH ABOVE, CD ON FIRST N SEGMENTS		0.0
22 LINEAR TWIST	DEG	0.0
23 PRINT DELTA PSI	DEG	90.00000
24 PITCH-FLAP COUPLING (DIRECT),	DTHETA/DBETA	-0.30600
25 PITCH-LAG COUPLING,	DTHETA/DDELTA	0.05000
26 LAG DAMPER	FT-LB-SEC/RAD	0.0
27 CHORD IF CONSTANT	FEET	0.0
28 NO. OF FLATWISE MODES USED		1.0
29 NO. OF EDGEWISE MODES USED		0.0
30 NO. OF TORSIONAL MODES USED		0.0
31 FLATWISE FREQUENCIES	NDO	
2.6990 5.0580 7.8790 12.0200 0.0 0.0		
37 EDGEWISE FREQUENCIES	NDO	
4.9410 14.4400 0.0		
40 TORSIONAL FREQUENCIES	NDO	
5.2990 15.2600 0.0		
43 A2S	DEG	0.0
44 B2S	DEG	0.0
45 GRAVITY	FT/SEC**2	32.200
46 1. = USE NONSYMMETRIC AIRFOIL DATA		1.0
47 1. = OUTPUT TRANSIENT RESPONSE		1.0
48 1. = HARMONICS OF Q'S , HUB SHEARS & MOM'TS (SET TO 1.0 IF COUPLED WITH F-389 PROGRAM)		1.0
49 GJ AT ROOT	LB-FT**2	38310.0
50 TORSIONAL ROOT SPRING	FT-LB/RAD	0.0
51 1. = SET QUADRATURE NOS. TO INPUTTED DX'S		1.0
52 1. = OUTPUT S AND AS INTEGRATION COEFS.		0.0
53 1. = LOAD INDUCED VELOCITIES		1.0
54 1. = USE INDUCED VELOCITIES		1.0

← NEW

← NEW

55 REQUESTED ALPHA S	DEG	0.0	
56 REQUESTED LIFT	LBS	10690.0	
57 REQUESTED PROPULSION FORCE	LBS	934.0	
58 TOLERANCE LIFT	LBS	200.0	
59 TOLERANCE PROPULSION FORCE	LBS	50.0	
60 NO. OF MAJOR (TRIM) ITERATIONS		0.0	
<0. = PERFORM STALL AVOIDANCE IF NEEDED			
61 PRE-CONING	DEG	0.0	
62 REQUESTED PITCHING MOMENT	LB-FT	190.0	
63 TOLERANCE PITCHING MOMENT	LB-FT	50.0	
64 REQUESTED ROLLING MOMENT	LB-FT	121.0	
65 TOLERANCE ROLLING MOMENT	LB-FT	50.0	
66 TRIM DERIVATIVE CALCULATION OPTION		1.0	
(0. = ANALYTICAL, 1. = NUMERICAL)			
67 ARTICULATED FLAP ANGLE (BETA)	RAD	0.09617	
68 ARTICULATED FLAP RATE (BETA*)	RAD	-0.00499	
69 ARTICULATED LAG ANGLE (DELTA)	RAD	-0.11697	
70 ARTICULATED LAG RATE (DELTA*)	RAD	0.00185	
72 PRE-LEAD	DEG	0.0	
73 1. = OUTPUT HARMONICS OF FLATWISE STRESS		1.0	
74 1. = OUTPUT HARMONICS OF EDGEWISE STRESS		1.0	
75 1. = OUTPUT HARMONICS OF TORSIONAL STRESS		1.0	
76 1. = WRITE I.C.; 2. = READ & WRITE I.C. TO DATA FILE		2.0	← NEW
77 REFERENCE BLADE AZIMUTH ANGLE	DEG	0.00001	
78 (1.+DELTA) FACTOR IN MOMENTUM EQUATIONS		2.00000	
79 GLAUERT VARIABLE INFLOW USAGE OPTION		0.0	
1. = USE GLAUERT INFLOW COMPONENTS (WITH OR W/O TRIM)			
2. = (ABOVE) + NO CONTROL ANGLE VARIATION IN TRIM			
3. = NO TRIM, SATISFY MOMENTUM EQUATIONS ONLY			
80 VO	ND OMEGA-R	0.0	
81 VIC	ND OMEGA-R	0.0	
82 VIS	ND OMEGA-R	0.0	
83-92 INTENTIONALLY BLANK			
93 SKIN FRICTION CD (FOR SKEWED FLOW EFFECTS)		0.0	
94 ELASTIC (VISCOUS EQUIV.) STRUCTURAL DAMPING		0.030	
(FRACTION OF CRITICAL VISCOUS DAMPING)			
95 VARIABLE INFLOW AZIMUTHAL SHAPE OPTION		0.	
0. = CONTINUOUS POINT TO POINT FUNCTION			
1. = STEPPED FUNCTION (SQUARE PULSES AT ORDINATES)			
96 1. = USE RADIAL FLOW - SHEPT AIRFOIL OPTION		1.0	
97 TOTAL NONLINEAR TWIST	DEG	-10.00000	
98 STRESS CALCULATION OPTION		0.	
0. = FORCE INTEGR., 1. = MODE DEFLECT.			
99 USUAL END OF CASE CONTROL		-1.0	

208

100 DELTA X	NDR			
0.039390	0.039770	0.066290	0.066670	0.100000
0.100000	0.100000	0.100000	0.100000	0.045450
0.037880	0.056820	0.060610	0.024620	0.024620
115 MASS	LB-SEC**2/FT.			
0.235800	0.210800	0.194800	0.155200	0.219100
0.213200	0.308000	0.250100	0.252900	0.115500
0.099380	0.151400	0.205700	0.054350	0.019720
130 NONLINEAR TWIST ANGLE	DEG			
(AERO. AND STRUCT. OR AERO. ONLY)				
0.165	0.861	2.277	4.081	4.000
3.500	2.500	1.500	0.500	-0.227
-0.644	-1.117	-1.705	-2.131	-2.377
145 CHORD NOT CONSTANT	FT			
0.0	0.39000	0.87000	1.24000	1.30000
1.30000	1.30000	1.30000	1.30000	1.30000
1.30000	1.29200	1.29200	1.20500	0.92300
160 FLATWISE STRESS/CURV., (EC/R) F	PSI			
26520.0	530300.0	109800.0	40530.0	34090.0
22730.0	20830.0	20830.0	21780.0	21780.0
21780.0	19890.0	19890.0	11360.0	4545.0
175 EDGEWISE STRESS/CURV., (EC/R) E	PSI			
49240.0	965900.0	795500.0	878800.0	878800.0
878800.0	852300.0	852300.0	947000.0	947000.0
852300.0	750000.0	750000.0	549200.0	227300.0
190 TORSION STRESS/MOMT.	IN**(-3)			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
205 CHORDWISE RADIUS OF GYRATION	NDR (KZ10)			
0.002335	0.010020	0.011770	0.014420	0.014420
0.014420	0.012470	0.014640	0.015000	0.015620
0.014020	0.014180	0.014060	0.011800	0.022620
220 THICKNESSWISE RAD OF GYRATION	NDR (KY10)			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
235 POLAR RADIUS OF GYRA SPAR	NDR			
0.002829	0.006389	0.009921	0.010990	0.010930
0.010880	0.010800	0.010800	0.010950	0.011070
0.011620	0.012160	0.012380	0.012530	0.009100
250 DIST FROM E.A. FORM'D TO C/4	NDR			
0.0	0.001700	0.003400	0.001000	-0.000150
-0.000200	-0.000100	-0.000100	-0.000100	-0.000650
-0.000600	-0.000600	-0.000600	-0.002000	-0.010000
265 DIST FROM E.A. FORM'D TO C.G.	NDR			
0.000400	-0.002100	-0.003600	-0.002600	-0.002600
-0.002700	-0.002200	0.000100	0.002700	0.002700
-0.000100	0.0	-0.000600	-0.007200	-0.019300



280 FLATWISE MODAL RESPONSE DEFLECTIONS (QWI)

0.003240 0.0 0.0 0.0

286 FLATWISE MODAL RESPONSE RATES (QWI\*)

0.001866 0.0 0.0 0.0

292 EDGEWISE MODAL RESPONSE DEFLECTIONS (QVP)

0.0 0.0 0.0

295 EDGEWISE MODAL RESPONSE RATES (QVP\*)

0.0 0.0 0.0

298 TORSION MODAL RESPONSE DEFLECTIONS (QTJ)

0.009570 0.0 0.0

301 TORSION MODAL RESPONSE RATES (QTJ\*)

0.014767 0.0 0.0

355 BUILT-IN AERO. (+, AFT) SWEEP ANGLE DEG

0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 30.000 30.000

498 LAG DAMPER BLADE ATTACHMENT SEGMENT NO.

2.

499 DAMPER ATTACH. REL. TO FEATH. BEARING OPTION

1.

0. = INBOARD, 1. = OUTBOARD

500 1. = USE TABULATED DAMPER (M VS. A\*) PROPERTIES

1.

501 NO. OF ABCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 23.

U(A\*) = RAD/SEC, U(M) = FT-LB

	A*	M(A*)	A*	M(A*)	A*	M(A*)
502	-0.1538	-812.50	-0.1385	-801.70	-0.1277	-782.70
	-0.1185	-758.30	-0.1077	-687.90	-0.0923	-492.90
	-0.0769	-335.80	-0.0615	-205.80	-0.0462	-113.80
	-0.0308	-54.20	-0.0154	-16.30	0.0	0.0
	0.0154	16.30	0.0308	54.20	0.0462	113.80
	0.0615	205.80	0.0769	335.80	0.0923	492.90
	0.1077	687.90	0.1185	758.30	0.1277	782.70
	0.1385	801.70	0.1538	812.50	0.0	0.0

EDGEWISE NONVISCOUS STRUCTURAL DAMPING CHARACTERISTICS  
(FRACTION OF CRITICAL DAMPING, = .5\*G )

554 1. = USE LOC. 94 VALUE IN NONVISCOUS FORMULATION 0.0

2. = USE DISTRIBUTION OF NONVISCOUS DAMPING

555 NONUNIFORM NONVISCOUS STRUCTURAL DAMPING DISTRIBUTION

0.0 0.0 0.0 0.0 0.0  
0.0 0.0 0.0 0.0 0.0  
0.0 0.0 0.0 0.0 0.0

600 I/C FLATWISE		IN**3		
1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000

  

615 I/C EDGEWISE		IN**3		
1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000

630-659 INTENTIONALLY BLANK

660 TORSION TWIST STIFFNESS, EB1, LB\*FT\*\*4

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

675 TWIST COUPLING STIFFNESS, EB2, LB\*FT\*\*3

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

.0	0.0	0.0	0.0	0.0
----	-----	-----	-----	-----

690 NONLINEAR TWIST ANGLE DEG  
(STRUCTURAL, IF DIFFERENT FROM AERO.)

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

705 NONLINEAR TWIST ANGLE CHANGE PER SEGMENT LENGTH DEG  
(0. = TWIST RATES COMPUTED INTERNALLY FROM INPUTTED TWIST ANGLES)

0.331	1.062	1.770	1.780	-1.000
-1.000	-1.000	-1.000	-1.000	-0.455
-0.379	-0.568	-0.606	-0.246	-0.246

720 DIST FROM E.A. FORM'D TO N.A. NDR

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

# STIFFNESS CHARACTERISTICS OF FLEX-BEAM:

735 PLATE BENDING STIFFNESS, D,	LB-FT			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
745 BEAM TORSION STIFFNESS, GK,	LB-FT**2			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
755 SECTION WIDTH	FT			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

# STIFFNESS CHARACTERISTICS OF TORQUE TUBE:

765 FLATWISE BENDING STIFFNESS	LB-FT**2			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
775 EDGEWISE BENDING STIFFNESS	LB-FT**2			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

# MASS CHARACTERISTICS OF TORQUE TUBE:

785 MASS	LB-SEC**2/FT			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
795 DIST FROM E.A. FORM'D TO C.G.	NDR			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

# SECTION MODULI OF TORQUE TUBE:

805 I/C FLATWISE	IN**3			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
815 I/C EDGEWISE	IN**3			
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

# 850 TRIM PARTIAL DERIVATIVE MATRIX

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

900 NO. OF PENDULAR VIBRATION ABSORBERS ACTIVATED 0.

DATA FOR PENDULAR ABSORBER NO. 1

212 901 RADIAL LOCATION OF HINGE, IN 35.000000  
902 VERTICAL OFFSET OF HINGE, IN -1.000000  
903 ARM LENGTH, IN 4.411000  
904 MASS, LB-SEC2/FT 0.155300  
905 ROTARY INERTIA ABOUT HINGE, LB-SEC2-FT 0.023080  
906 DISCRETE SPRING, LB-FT/RAD 0.0  
907 VISCOUS DAMPING COEFFICIENT, LB-SEC-FT 0.006578  
908 FRICTION MOMENT, LB-FT 0.0  
909 FLAP ANGLE (BETA P), RAD 0.0  
910 FLAP RATE (BETA P\*), RAD 0.0

DATA FOR PENDULAR ABSORBER NO. 2

911 RADIAL LOCATION OF HINGE, IN 40.000000  
912 VERTICAL OFFSET OF HINGE, IN 1.000000  
913 ARM LENGTH, IN 2.614000  
914 MASS, LB-SEC2/FT 0.093200  
915 ROTARY INERTIA ABOUT HINGE, LB-SEC2-FT 0.004863  
916 DISCRETE SPRING, LB-FT/RAD 0.0  
917 VISCOUS DAMPING COEFFICIENT, LB-SEC-FT 0.001872  
918 FRICTION MOMENT, LB-FT 0.0  
919 FLAP ANGLE (BETA P), RAD 0.0  
920 FLAP RATE (BETA P\*), RAD 0.0  
  
921 INTEGRATION FREQ., ABSORBER NO. 1 NDO 2.850000  
922 INTEGRATION FREQ., ABSORBER NO. 2 NDO 3.650000  
  
923 BUILT-IN HINGE PITCH ANGLE NO. 1 DEG 0.0  
924 BUILT-IN HINGE PITCH ANGLE NO. 2 DEG 0.0

DATA FOR CALCULATION OF HUB EXCITATION VECTOR AND IMPEDANCE MATRIX

930 MULTIPLE OF NUMBER OF BLADES 0.0  
(VALUE X NO. OF BLADES = VIBRATION (P) ORDER)  
931 LINEAR HUB ACCEL. PERTURB. AMPL. FT/SEC\*\*2 0.500000  
932 ROTARY HUB ACCEL. PERTURB. AMPL. RAD/SEC\*\*2 0.050000

NOTE... MAXIMUM HARMONIC CAPABILITY = 10

957 HGT OF ROTOR ABOVE GRND OR TEST SECT FLR (FT)	0.0
958 HEIGHT OF WIND TUNNEL TEST SECTION (FT)	0.0
959 WIDTH OF WIND TUNNEL TEST SECTION (FT)	0.0
975 CASE NUMBER	2.0 ← NEW
976 BUILT-IN PUSH-ROD ATTACH. PITCH ANGLE (DEG)	0.0
977 PITCH HORN/CUFF INB'D BLADE ATTACH. SEG. NO.	0.0
978 PITCH HORN/CUFF OUTB'D BLADE ATTACH. SEG. NO.	0.0
979 PUSH-ROD RADIAL LOCATION (IN)	0.0
980 PUSH-ROD LOCATION FORWARD OF FEATH. AXIS (IN)	0.0
981 INNERMOST SEGMENT NO. OF FEATHERING FLEXURE	0.
982 BUILT-IN TWIST ANGLE OF FLEXURE (DEG)	0.0
983 GJ OF SPAR/FLEXURE (LB-FT <sup>2</sup> )	0.0
984 FLEXURE TORSION STRESS COEF. (IN-PSI)	0.0
985 1. = INCLUDE WOBBLE MODE (XBR CASES ONLY)	0.
986 SNUBBER STIFFNESS ALIGNMENT OPTION	0.
0. = VERT- INPLANE; 1. = TT FLAT- EDGE	
987 INB'D SNUBBER VERTICAL (FLAT) SPRING (LB/FT)	0.0
988 INB'D SNUBBER INPLANE (EDGE) SPRING (LB/FT)	0.0
989 TORQUE TUBE AXIAL LOAD RESTRAINT OPTION	0.
0. = INBOARD RESTRAINT (TT IN TENSION)	
1. = OUTBOARD RESTRAINT (TT IN COMPRESSION)	
990 INNERMOST SEGMENT NO. OF TORQUE TUBE	0.
991 1. = USE T-TUBE/F-BEAM REDUNDANT ANALYSIS	0.
992 FLAT*EDGE TORS. TERM OVER T-TUBE SPAN OPTION	0.0
0. = (EIZ-EIY)*VE''*WE''* 1.0	
1. = '' * 0.0	
2. = '' * PSEUDO-TORS. MODE	
993 FLEX-BEAM PLATE ASPECT RATIO PARAMETER	0.0
0. = INFINITE VALUE, ROD-LIKE (LINEAR) TWIST	
994 OUTB'D END TT- SPAR FLAT SPRING (FT-LB/RAD)	0.0
995 OUTB'D END TT- SPAR EDGE SPRING (FT-LB/RAD)	0.0
996 STATIC (STEADY-STATE) AIRFOIL DATA OPTION	0.
0. = INPUTTED TABULAR; 1. = ANALYTIC NACA 0012	
997 UNSTEADY AIRFOIL DATA OPTION	0.0
0. = STATIC DATA ONLY; 1. = SYNTH. UTRC DATA	
(VALUE - 1.) = NONSTD CUTOFF MACH NUMBER	
998 DELTA PSI FOR F389 DATA TRANSFERAL	15.00000
999 MODE OF DATA TRANSFER WITH PROGRAM F389	1.0
(0. = PUNCHED CARDS, 1. = DATA FILES)	

1000 1. = USE TABULATED (D) CONTROL ANGLES VS. TIME 0.

214

D THETA-75 TABLE:

1001 NO. OF ABSCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 0.

	T	F(T)	T	F(T)	T	F(T)
1002	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0

D AIS TABLE:

1051 NO. OF ABSCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 0.

	T	F(T)	T	F(T)	T	F(T)
1052	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0

D B1S TABLE:

1101 NO. OF ABSCISSA-ORDINATE POINT PAIRS INPUTTED (MAX=24.) 0.

	T	F(T)	T	F(T)	T	F(T)
1102	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0

BLADE MODE SHAPES READ FROM UNIT 24 IN SUBROUTINE NIAM

INPUTTED VARIABLE INFLOW DISTRIBUTIONS (OUTPUT FROM PROGRAM F389 OR EQUIVALENT), FPS

HARMONIC COEFFICIENTS:  $\text{LAMBDA}(X(J), \text{PSI}) = \text{RAVLAM} + (\text{VLAM0}(J) + \text{SUM}(\text{VLAMA}(J, N) * \text{COS}(N * \text{PSI}) + \text{VLAMB}(J, N) * \text{SIN}(N * \text{PSI})) / \text{OMEGA} - R$

SEG. #, J =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
VLAM0	-2.45	-2.45	-2.45	-3.97	-6.61	-8.95	-8.80	-9.06	-10.27	-10.92	-10.25	-10.27	-13.30	-9.61	-9.00
VLAMA 1	-1.78	-1.78	-1.78	-1.47	-0.93	-1.11	-3.78	-5.95	-7.07	-7.47	-7.99	-8.51	-8.86	-1.40	-1.04
VLAMB 1	-8.50	-8.50	-8.50	-9.41	-10.99	-12.00	-10.32	-8.21	-5.43	-2.76	-0.86	1.47	5.04	6.15	7.16
VLAMA 2	4.16	4.16	4.16	3.43	2.16	1.16	1.70	2.32	2.14	1.19	0.35	-0.47	-1.03	1.55	1.64
VLAMB 2	5.01	5.01	5.01	3.42	0.65	-1.46	0.06	-0.69	-2.64	-4.05	-4.45	-4.75	-4.55	-6.91	-7.49
VLAMA 3	5.20	5.20	5.20	4.07	2.10	1.16	4.51	4.61	4.23	4.35	4.34	4.19	3.48	3.69	3.50
VLAMB 3	-5.58	-5.58	-5.58	-4.08	-1.46	0.39	-1.65	-0.98	0.10	0.19	-0.16	-0.58	-1.14	-1.45	-1.94
VLAMA 4	0.68	0.68	0.68	0.57	0.37	-0.10	-1.24	0.94	2.59	2.51	2.38	2.34	2.70	3.15	3.47
VLAMB 4	-3.63	-3.63	-3.63	-2.67	-1.01	0.56	0.88	-0.55	-1.72	-1.64	-1.21	-0.75	-0.31	-0.05	-0.01
VLAMA 5	1.26	1.26	1.26	0.83	0.08	-0.21	1.38	0.23	0.09	0.97	0.95	0.91	0.84	0.84	1.08
VLAMB 5	2.62	2.62	2.62	2.12	1.25	0.46	0.42	0.43	-0.09	-0.88	-1.35	-1.69	-1.35	-0.91	-0.66
VLAMA 6	2.62	2.62	2.62	2.07	1.10	0.07	-0.54	0.35	0.34	-0.25	-0.05	0.15	0.25	0.13	0.11
VLAMB 6	-1.83	-1.83	-1.83	-1.35	-0.51	0.28	0.42	0.28	0.39	0.51	0.32	0.02	-0.64	-0.83	-0.87
VLAMA 7	0.57	0.57	0.57	0.72	0.97	1.08	0.58	0.68	0.84	0.53	-0.08	-0.52	-0.11	-0.07	-0.04
VLAMB 7	-3.62	-3.62	-3.62	-2.87	-1.57	-0.41	-0.46	0.19	0.28	0.09	0.36	0.58	0.51	0.31	0.06
VLAMA 8	2.16	2.16	2.16	1.93	1.52	0.95	0.15	-0.05	0.58	1.02	0.66	0.27	-0.10	-0.18	-0.07
VLAMB 8	1.15	1.15	1.15	1.06	0.90	0.64	0.19	-0.37	-0.16	0.22	-0.04	-0.15	0.40	0.54	0.52
VLAMA 9	1.65	1.65	1.65	1.38	0.92	0.42	0.13	0.37	0.11	-0.11	0.36	0.71	0.44	0.18	0.08
VLAMB 9	2.03	2.03	2.03	1.62	0.91	0.24	0.11	0.27	0.10	-0.14	-0.05	-0.01	-0.26	-0.11	0.08
VLAMA10	0.15	0.15	0.15	0.20	0.29	0.32	0.11	-0.15	0.01	0.19	-0.05	-0.11	0.56	0.42	0.21
VLAMB10	-0.38	-0.38	-0.38	-0.18	0.17	0.32	-0.39	-0.20	-0.27	-0.43	-0.13	0.05	-0.31	-0.36	-0.35
VLAMA11	-0.25	-0.25	-0.25	-0.21	-0.14	0.00	0.35	0.51	0.66	0.53	0.12	-0.21	-0.10	-0.11	-0.08
VLAMB11	1.11	1.11	1.11	0.85	0.40	-0.03	-0.09	-0.19	0.24	0.47	-0.01	-0.35	0.01	-0.12	-0.27
VLAMA12	-0.20	-0.20	-0.20	-0.14	-0.03	0.09	0.18	0.19	0.07	0.01	0.06	0.04	-0.28	-0.29	-0.18
VLAMB12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

AZIMUTHAL VARIATION:

SEG. #, J =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
216 PSI															
0.	13.78	13.78	13.78	9.41	1.79	-5.12	-5.29	-5.03	-5.67	-7.46	-9.18	-11.47	-15.51	-1.69	-0.32
15.	-5.36	-5.36	-5.36	-6.80	-9.32	-11.60	-11.65	-13.00	-15.94	-18.07	-18.23	-19.07	-22.54	-9.36	-8.50
30.	-16.67	-16.67	-16.67	-16.86	-17.18	-17.33	-16.75	-19.80	-23.83	-25.56	-25.23	-25.34	-27.35	-17.51	-17.25
45.	-5.43	-5.43	-5.43	-8.01	-12.51	-17.91	-23.33	-25.53	-27.17	-27.55	-26.27	-25.29	-25.88	-19.56	-19.23
60.	-15.48	-15.48	-15.48	-17.49	-20.98	-24.25	-24.73	-24.72	-24.89	-24.06	-22.09	-20.26	-19.52	-15.17	-13.99
75.	-10.97	-10.97	-10.97	-14.48	-20.61	-25.72	-24.09	-22.80	-21.39	-18.79	-15.56	-12.53	-11.22	-8.69	-7.28
90.	-2.51	-2.51	-2.51	-6.87	-14.50	-20.80	-18.57	-17.02	-15.57	-13.04	-9.86	-7.07	-6.72	-2.65	0.99
105.	-11.75	-11.75	-11.75	-13.59	-16.81	-18.96	-15.97	-13.87	-11.20	-8.20	-5.93	-2.99	2.06	4.97	6.32
120.	-19.18	-19.18	-19.18	-19.14	-19.06	-17.90	-13.57	-9.69	-9.33	-7.09	-0.22	5.15	2.67	3.64	4.72
135.	-10.18	-10.18	-10.18	-11.45	-13.66	-14.26	-8.68	-8.70	-4.88	0.65	2.08	2.84	0.60	1.41	2.50
150.	-11.03	-11.03	-11.03	-11.03	-11.03	-10.70	-9.38	-7.63	-4.32	-1.47	-0.59	-0.20	-1.98	-1.17	-0.22
165.	-4.45	-4.45	-4.45	-5.97	-8.62	-11.33	-12.63	-4.35	-1.09	-3.23	-2.62	-2.50	-4.43	-4.22	-3.34
180.	0.47	0.47	0.47	-1.23	-4.19	-7.80	-11.61	-5.90	-3.39	-5.07	-4.59	-4.63	-6.89	-7.97	-7.32
195.	3.01	3.01	3.01	1.14	-2.12	-4.57	-2.62	-2.13	-4.43	-6.49	-6.06	-6.32	-9.40	-12.07	-11.81
210.	8.65	8.65	8.65	5.42	-0.20	-3.11	5.47	1.46	-5.07	-7.42	-7.29	-7.97	-11.95	-15.91	-16.17
225.	16.80	16.80	16.80	12.25	4.31	-0.93	6.67	2.71	-4.14	-7.26	-7.59	-8.91	-14.18	-18.66	-19.41
240.	25.86	25.86	25.86	19.97	9.69	1.40	5.27	4.07	-1.53	-6.22	-7.18	-9.22	-15.39	-19.65	-20.87
255.	3.29	3.29	3.29	3.21	3.07	2.48	0.66	2.31	0.11	-4.31	-5.80	-8.48	-15.55	-18.36	-19.75
270.	-10.98	-10.98	-10.98	-7.74	-2.10	1.70	-3.40	-3.98	-3.48	-3.98	-4.97	-7.31	-14.81	-15.44	-16.48
285.	-6.44	-6.44	-6.44	-4.37	-0.75	1.04	-4.81	-9.19	-12.29	-12.90	-11.86	-11.86	-16.25	-12.45	-12.46
300.	-5.64	-5.64	-5.64	-3.77	-0.51	0.93	-5.06	-9.87	-14.30	-17.10	-18.14	-20.08	-25.33	-17.83	-16.66
315.	-4.28	-4.28	-4.28	-2.68	0.12	1.11	-5.02	-9.43	-13.22	-15.53	-16.33	-18.15	-23.79	-13.83	-13.24
330.	0.88	0.88	0.88	0.05	-1.40	-3.33	-5.84	-8.37	-10.98	-12.53	-12.92	-14.40	-20.17	-7.52	-6.60
345.	8.75	8.75	8.75	4.81	-2.06	-7.87	-6.35	-6.92	-8.53	-9.49	-9.46	-10.46	-15.58	-1.05	0.42
360.	13.78	13.78	13.78	9.41	1.79	-5.12	-5.29	-5.03	-5.67	-7.46	-9.18	-11.47	-15.51	-1.69	-0.32

TORSIONAL RETENTION SPRINGS AND EFFECTIVE FLEX-BEAM TORSIONAL STIFFNESSES

KTHETA1	KTHETA2	KTHETA3	GJ-EFF	TKA2
0.0	0.0	0.0	0.0	0.0



LINEAR AND NONLINEAR MODAL DEFLECTION VECTORS

FLATWISE MODE 1

MODAL FREQUENCY = 2.69900

PITCH-FLAT COUPLING, AW(1) = 0.56121

N	X	GW	GWP	GWPP	DVB	DV2BP	DWBB	DW2BBP	DWBC	DW2BCP	DWCC	DW2CCP
1	0.01969	-0.03532	-1.78702	1.03957	-0.00020	-0.00515	-0.00000	-0.00001	0.0	0.0	0.0	0.0
2	0.05927	-0.10557	-1.75724	0.14742	-0.00169	-0.02661	-0.00001	-0.00021	0.0	0.0	0.0	0.0
3	0.11230	-0.19775	-1.70572	1.10105	-0.00800	-0.06951	-0.00016	-0.00140	0.0	0.0	0.0	0.0
4	0.17878	-0.30648	-1.53452	3.51134	-0.02233	-0.12094	-0.00081	-0.00441	0.0	0.0	0.0	0.0
5	0.26212	-0.42079	-1.17569	4.63436	-0.03189	-0.12061	-0.00113	-0.00423	0.0	0.0	0.0	0.0
6	0.36212	-0.51067	-0.55541	8.25351	-0.03937	-0.11284	-0.00119	-0.00322	0.0	0.0	0.0	0.0
7	0.46212	-0.52348	0.37955	11.09248	-0.04126	-0.11089	-0.00071	-0.00129	0.0	0.0	0.0	0.0
8	0.56212	-0.42807	1.56340	12.16763	-0.04454	-0.12769	0.00001	0.00076	0.0	0.0	0.0	0.0
9	0.66212	-0.21069	2.76408	11.51697	-0.05328	-0.16555	0.00105	0.00329	0.0	0.0	0.0	0.0
10	0.73484	0.02013	3.55547	10.09451	-0.06545	-0.20576	0.00211	0.00563	0.0	0.0	0.0	0.0
11	0.77651	0.17652	3.93865	8.30104	-0.07529	-0.23307	0.00289	0.00723	0.0	0.0	0.0	0.0
12	0.82386	0.37234	4.30407	6.19764	-0.08938	-0.26716	0.00396	0.00929	0.0	0.0	0.0	0.0
13	0.88257	0.63432	4.55631	2.31075	-0.11154	-0.31282	0.00562	0.01226	0.0	0.0	0.0	0.0
14	0.92519	0.82993	4.59691	0.69185	-0.13104	-0.34689	0.00709	0.01472	0.0	0.0	0.0	0.0
15	0.94981	0.94324	4.60816	0.18414	-0.14363	-0.36666	0.00806	0.01625	0.0	0.0	0.0	0.0

QUADRATIC DEFLECTION VECTORS DUE TO TORSION MODAL TWIST (DVE(1,J), DV2EP(1,J)) AND TO FLATWISE BENDING (UWE(1,M))

		J = (1)		(2)		(3)		/ M = (1)		(2)	(3)	(4)
N	X	DVE	DV2EP	DVE	DV2EP	DVE	DV2EP	/	UWE			
1	0.01969	0.0	0.0	0.0	0.0	0.0	0.0	0.06289	0.0	0.0	0.0	
2	0.05927	0.0	0.0	0.0	0.0	0.0	0.0	0.18720	0.0	0.0	0.0	
3	0.11230	0.0	0.0	0.0	0.0	0.0	0.0	0.34622	0.0	0.0	0.0	
4	0.17878	0.0	0.0	0.0	0.0	0.0	0.0	0.52120	0.0	0.0	0.0	
5	0.26212	0.0	0.0	0.0	0.0	0.0	0.0	0.67692	0.0	0.0	0.0	
6	0.36212	0.0	0.0	0.0	0.0	0.0	0.0	0.76145	0.0	0.0	0.0	
7	0.46212	0.0	0.0	0.0	0.0	0.0	0.0	0.78408	0.0	0.0	0.0	
8	0.56212	0.0	0.0	0.0	0.0	0.0	0.0	0.91349	0.0	0.0	0.0	
9	0.66212	0.0	0.0	0.0	0.0	0.0	0.0	1.41771	0.0	0.0	0.0	
10	0.73484	0.0	0.0	0.0	0.0	0.0	0.0	2.15520	0.0	0.0	0.0	
11	0.77651	0.0	0.0	0.0	0.0	0.0	0.0	2.74172	0.0	0.0	0.0	
12	0.82386	0.0	0.0	0.0	0.0	0.0	0.0	3.54757	0.0	0.0	0.0	
13	0.88257	0.0	0.0	0.0	0.0	0.0	0.0	4.70088	0.0	0.0	0.0	
14	0.92519	0.0	0.0	0.0	0.0	0.0	0.0	5.59348	0.0	0.0	0.0	
15	0.94981	0.0	0.0	0.0	0.0	0.0	0.0	6.11502	0.0	0.0	0.0	

## TORSION MODES

218

N	X	GT(1)	GTP(1)	GT(2)	GTP(2)	GT(3)	GTP(3)
1	0.01969	1.00000	0.0	-0.58752	-5.13175	0.0	0.0
2	0.05927	1.00000	0.0	-0.70266	-0.67486	0.0	0.0
3	0.11230	1.00000	0.0	-0.76005	-1.20638	0.0	0.0
4	0.17878	1.00000	0.0	-0.85852	-1.53923	0.0	0.0
5	0.26212	1.00000	0.0	-0.97067	-0.73585	0.0	0.0
6	0.36212	1.00000	0.0	-0.97200	0.88397	0.0	0.0
7	0.46212	1.00000	0.0	-0.78328	2.86662	0.0	0.0
8	0.56212	1.00000	0.0	-0.40815	4.27372	0.0	0.0
9	0.66212	1.00000	0.0	0.06821	4.65049	0.0	0.0
10	0.73484	1.00000	0.0	0.39922	4.27209	0.0	0.0
11	0.77651	1.00000	0.0	0.56800	3.83515	0.0	0.0
12	0.82386	1.00000	0.0	0.73949	3.11226	0.0	0.0
13	0.88257	1.00000	0.0	0.89121	1.71495	0.0	0.0
14	0.92519	1.00000	0.0	0.93764	1.36451	0.0	0.0
15	0.94981	1.00000	0.0	0.98931	2.02895	0.0	0.0

## RADIAL DISTRIBUTIONS OF AERODYNAMIC AND DYNAMIC/STRUCTURAL QUANTITIES

N	X	XCEN	CHORD	THETA-AERO	PHI	ALPHA	MACH	CL	CD	CM	KAPPA/U	(Y10C/4)/C
1	0.01969	0.05757	0.0	9.256	16.529	25.785	0.014	0.0	0.0	0.0	0.0	0.0
2	0.05927	0.09715	0.39000	9.952	6.043	15.996	0.038	1.75982	0.10300	-0.04387	0.18142	0.09590
3	0.11230	0.15018	0.87000	11.368	3.211	14.580	0.069	1.70318	0.04971	-0.03112	0.22475	0.08598
4	0.17878	0.21666	1.24000	13.172	-0.676	12.496	0.109	1.51687	0.02316	-0.02109	0.23709	0.01774
5	0.26212	0.30000	1.30000	13.091	-3.596	9.495	0.160	1.20484	0.01473	-0.00550	0.17699	-0.00254
6	0.36212	0.40000	1.30000	12.591	-4.669	7.922	0.221	1.05368	0.01242	0.00324	0.12841	-0.00338
7	0.46212	0.50000	1.30000	11.591	-3.738	7.853	0.281	1.05951	0.01231	0.00637	0.10052	-0.00169
8	0.56212	0.60000	1.30000	10.591	-2.998	7.593	0.342	1.06151	0.01300	0.00856	0.08277	-0.00169
9	0.66212	0.70000	1.30000	9.591	-2.577	7.014	0.402	1.04080	0.01330	0.01144	0.07033	-0.00169
10	0.73484	0.77272	1.30000	8.864	-2.568	6.296	0.446	0.95174	0.01576	0.00747	0.06457	-0.01100
11	0.77651	0.81439	1.30000	8.447	-2.723	5.724	0.471	0.78616	0.01171	0.00328	0.06100	-0.01015
12	0.82386	0.86174	1.29200	7.974	-2.897	5.077	0.500	0.71955	0.01083	0.00231	0.05714	-0.01022
13	0.88257	0.92045	1.29200	7.386	-3.141	4.245	0.536	0.63630	0.01088	0.00300	0.05334	-0.01022
14	0.92519	0.96307	1.20500	6.960	-1.719	5.241	0.561	0.78113	0.01924	0.00463	0.04995	-0.03651
15	0.94981	0.98769	0.92300	6.714	-1.541	5.173	0.576	0.78514	0.02035	0.00511	0.05130	-0.23835

N	X	XCEN	QUAD	THETA-STR	TWIST-BLT	TWIST-TOT	TENSB	EIYB	EIZB	(Y10NA)/C	MASSB	(Y10CG)/C
1	0.01969	0.05757	0.03939	9.256	0.14644	0.14644	0.5866	0.00221	0.00411	0.0	2.73222	0.0
2	0.05927	0.09715	0.03977	9.952	0.46606	0.46606	0.5788	0.04427	0.08063	0.0	2.41920	-0.11846
3	0.11230	0.15018	0.06629	11.368	0.46602	0.46602	0.5677	0.00917	0.06641	0.0	1.34122	-0.09103
4	0.17878	0.21666	0.06667	13.172	0.46598	0.46598	0.5532	0.00338	0.07336	0.0	1.06248	-0.04613
5	0.26212	0.30000	0.10000	13.091	-0.17453	-0.17453	0.5312	0.00205	0.07336	0.0	1.00000	-0.04400
6	0.36212	0.40000	0.10000	12.591	-0.17453	-0.17453	0.4967	0.00190	0.07336	0.0	0.97307	-0.04569
7	0.46212	0.50000	0.10000	11.591	-0.17453	-0.17453	0.4427	0.00174	0.07115	0.0	1.40575	-0.03723
8	0.56212	0.60000	0.10000	10.591	-0.17453	-0.17453	0.3729	0.00174	0.07115	0.0	1.14149	0.00169
9	0.66212	0.70000	0.10000	9.591	-0.17453	-0.17453	0.2983	0.00182	0.07905	0.0	1.15427	0.04569
10	0.73484	0.77272	0.04545	8.864	-0.17472	-0.17472	0.2364	0.00182	0.07905	0.0	1.15926	0.04569
11	0.77651	0.81439	0.03788	8.447	-0.17463	-0.17463	0.1975	0.00182	0.07115	0.0	1.19742	-0.00169
12	0.82386	0.86174	0.05682	7.974	-0.17447	-0.17447	0.1495	0.00166	0.06261	0.0	1.21614	0.0
13	0.88257	0.92045	0.06061	7.386	-0.17450	-0.17450	0.0768	0.00166	0.06261	0.0	1.54899	-0.01022
14	0.92519	0.96307	0.02462	6.960	-0.17439	-0.17439	0.0210	0.00095	0.04585	0.0	1.00756	-0.13145
15	0.94981	0.98769	0.02462	6.714	-0.17439	-0.17439	0.0045	0.00038	0.01897	0.0	0.36557	-0.46002

PART II. TIME HISTORY SOLUTION OF COMPLETE (NONLINEAR) EQUATION SET - AEROELASTIC TRANSIENT RESPONSES

A1S      B1S      A2S      B2S      THETA 75      LAMBDA      MU      V0      VIC      V1S  
 -2.500      5.869      0.0      0.0      8.540      -0.03840      0.300      0.0      0.0      0.0

PSI = 0.00 DEG.      REV = 3

N	X_CEN	PHI	ALPHA	MACH NO.	CL	CD	CM	SAZ5	SAYS	MAX5	SDZ5	SDY5	MDX5	HEX9
1	0.0576	-50.205	-40.691	0.022	0.0	0.0	0.0	0.0	0.0	0.0	-2.1627	2.2069	-0.3414	0.0
2	0.0972	-24.317	-14.108	0.042	-1.6754	0.0319	0.0269	-0.1282	0.0535	-0.0492	-3.2815	0.9419	0.5162	0.0
3	0.1502	-13.978	-2.353	0.072	-0.1223	0.0094	0.0003	-0.0674	0.0105	-0.0337	-2.6161	0.1915	1.4936	0.0
4	0.2167	-11.688	1.741	0.113	0.3125	0.0085	-0.0011	0.5875	-0.1314	0.2633	-3.1988	0.3337	0.4360	0.0
5	0.3000	-11.118	2.230	0.164	0.3796	0.0088	-0.0000	1.5863	-0.3370	0.1718	-4.1622	0.3109	1.1907	0.0
6	0.4000	-10.105	2.744	0.225	0.4611	0.0094	0.0015	3.6415	-0.7048	0.3164	-5.3958	0.2761	2.2722	0.0
7	0.5000	-7.989	3.859	0.285	0.6054	0.0100	0.0019	7.7185	-1.1794	0.5906	-9.7336	0.4857	4.0914	0.0
8	0.6000	-6.444	4.404	0.345	0.6911	0.0101	0.0055	12.9670	-1.6126	1.7869	-9.4638	0.7973	-1.8046	0.0
9	0.7000	-5.430	4.418	0.405	0.7199	0.0100	0.0092	18.6803	-1.9851	3.8418	-11.1450	1.2656	-9.3940	0.0
10	0.7727	-5.076	4.045	0.449	0.6771	0.0096	0.0064	21.6121	-2.1780	0.1582	-12.3661	1.2379	-10.2381	0.0
11	0.8144	-5.056	3.649	0.474	0.5214	0.0088	0.0023	18.5733	-1.9166	-0.9490	-13.4813	0.6939	-0.7684	0.0
12	0.8617	-5.050	3.182	0.503	0.4739	0.0087	0.0016	18.8754	-1.9768	-1.2592	-14.4880	0.6995	-1.0798	0.0
13	0.9205	-5.100	2.544	0.539	0.4082	0.0087	0.0019	18.6483	-2.0311	-0.8722	-19.7188	0.6942	1.8965	0.0
14	0.9631	-4.901	2.317	0.402	0.3255	0.0083	0.0033	7.7235	-0.7428	-1.8522	-13.4691	-0.6891	24.9154	0.0
15	0.9877	-4.546	2.426	0.417	0.3442	0.0083	0.0030	6.7346	-0.6040	-12.6689	-5.0440	-1.0013	24.7197	0.0

	QW1	QW2	QW3	QW4	QV1	QV2	QV3	QT1	QT2	QT3	BETA	DELTA	BETA-P1	BETA-P2
XI	-0.194D-020.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.464D-02	-0.191D-020.0		0.0
Q**	-0.101D-010.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.131D-01	-0.632D-020.0		0.0
Q*	-0.519D-030.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.615D-020	0.132D-020.0		0.0
Q	0.211D-020.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.802D-01	-0.114D+000.0		0.0

N	X_CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	-0.019	0.003	0.0	1204.	601.	0.	1805.	232.03	0.0	0.0
2	0.0972	-0.058	0.010	0.0	3282.	927.	0.	4209.	229.99	0.0	0.0
3	0.1502	-0.108	0.022	0.0	5305.	1333.	0.	6638.	209.91	0.0	0.0
4	0.2167	-0.166	0.040	0.0	6811.	1935.	0.	8746.	184.36	0.0	0.0
5	0.3000	-0.227	0.054	0.0	7382.	2107.	0.	9489.	151.85	0.0	0.0
6	0.4000	-0.277	0.063	0.0	6204.	1585.	0.	7789.	87.57	0.0	0.0
7	0.5000	-0.285	0.060	0.0	3350.	33.	0.	3384.	-25.83	0.0	0.0
8	0.6000	-0.234	0.045	0.0	-1296.	-1195.	0.	2491.	-101.62	0.0	0.0
9	0.7000	-0.116	0.020	0.0	-4624.	87.	0.	4711.	-21.42	0.0	0.0
10	0.7727	0.010	-0.002	0.0	-4825.	2456.	0.	7281.	129.24	0.0	0.0
11	0.8144	0.096	-0.015	0.0	-3945.	3483.	0.	7428.	204.48	0.0	0.0
12	0.8617	0.203	-0.029	0.0	-2541.	3920.	0.	6462.	232.16	0.0	0.0
13	0.9205	0.347	-0.047	0.0	-695.	4114.	0.	4808.	241.27	0.0	0.0
14	0.9631	0.455	-0.058	0.0	-12.	3013.	0.	3025.	155.34	0.0	0.0
15	0.9877	0.517	-0.063	0.0	5.	1017.	0.	1022.	39.57	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

PSI = 90.00 DEG.

REV = 3

220

N	X CEN	PHI	ALPHA	MACH NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-7.707	-6.112	0.218	0.0	0.0	0.0	0.0	0.0	0.0	-1.0342	2.2003	-0.2009	0.0
2	0.0972	-6.620	-4.329	0.241	-0.3497	0.0104	0.0011	-0.9705	0.0838	-0.4260	-1.4247	0.8381	-0.6883	0.0
3	0.1502	-5.457	-1.750	0.273	-0.0593	0.0087	-0.0000	-0.4763	-0.0236	-0.4742	-1.2110	0.0574	-0.1177	0.0
4	0.2167	-4.986	0.525	0.313	0.1926	0.0086	-0.0003	2.8502	-0.3813	0.5099	-1.4304	0.1554	-0.9184	0.0
5	0.3000	-4.847	0.584	0.364	0.2133	0.0084	0.0014	4.4667	-0.5617	0.0281	-1.8814	0.0746	-0.4911	0.0
6	0.4000	-4.419	0.511	0.424	0.2258	0.0081	0.0043	6.4399	-0.7340	1.2966	-2.4549	-0.0167	0.0875	0.0
7	0.5000	-3.281	0.650	0.484	0.2494	0.0080	0.0043	9.2915	-0.8347	1.9072	-4.4650	0.0133	0.9546	0.0
8	0.6000	-2.446	0.484	0.545	0.2226	0.0080	0.0038	10.4935	-0.8260	2.0979	-4.4084	0.4020	-1.8144	0.0
9	0.7000	-1.779	0.151	0.605	0.1669	0.0081	0.0029	9.7081	-0.7714	1.9192	-5.2554	0.8637	-5.3130	0.0
10	0.7727	-1.254	-0.050	0.649	0.1606	0.0090	0.0002	10.7525	-0.8331	-2.0988	-5.8244	0.8227	-5.6985	0.0
11	0.8144	-0.851	-0.064	0.674	0.0645	0.0083	-0.0020	4.6597	-0.6689	-3.5171	-6.2751	0.2460	-1.0737	0.0
12	0.8617	-0.482	-0.169	0.702	0.0457	0.0084	-0.0033	3.5612	-0.6834	-5.0330	-6.7454	0.2312	-1.1969	0.0
13	0.9205	-0.263	-0.538	0.738	-0.0381	0.0086	-0.0111	-3.2903	-0.7279	-14.9003	-9.1587	0.0638	0.0962	0.0
14	0.9631	0.087	-0.614	0.653	-0.0211	0.0085	-0.0028	-1.3287	-0.4634	-1.6540	-6.1154	-1.1334	11.2889	0.0
15	0.9877	0.352	-0.595	0.668	-0.0205	0.0085	-0.0031	-1.0310	-0.3774	0.5508	-2.1986	-1.1759	11.1011	0.0

QW1 QW2 QW3 QW4 QV1 QV2 QV3 QT1 QT2 QT3 BETA DELTA BETA-P1 BETA-P2

XI	0.119D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.70D-03-.664D-030.0	0.0
Q**	0.585D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-3.71D-03-.145D-020.0	0.0
Q*	0.316D-030.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.29D-01-.205D-020.0	0.0
Q	-7.77D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.376D-01-.115D+000.0	0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	0.072	-0.002	0.0	618.	-1535.	0.	2153.	-418.93	0.0	0.0
2	0.0972	0.216	-0.009	0.0	1772.	-1207.	0.	2979.	-411.85	0.0	0.0
3	0.1502	0.405	-0.026	0.0	2692.	-1070.	0.	3762.	-401.49	0.0	0.0
4	0.2167	0.625	-0.060	0.0	2936.	-1206.	0.	4143.	-390.72	0.0	0.0
5	0.3000	0.858	-0.082	0.0	2489.	-1132.	0.	3620.	-376.87	0.0	0.0
6	0.4000	1.042	-0.090	0.0	1223.	-1218.	0.	2441.	-378.89	0.0	0.0
7	0.5000	1.070	-0.074	0.0	-765.	-1687.	0.	2452.	-411.42	0.0	0.0
8	0.6000	0.877	-0.045	0.0	-3196.	-1687.	0.	4883.	-421.97	0.0	0.0
9	0.7000	0.434	-0.015	0.0	-4622.	437.	0.	5060.	-399.06	0.0	0.0
10	0.7727	-0.037	0.001	0.0	-4372.	2981.	0.	7353.	-369.88	0.0	0.0
11	0.8144	-0.356	0.005	0.0	-3421.	3938.	0.	7359.	-330.85	0.0	0.0
12	0.8617	-0.756	0.004	0.0	-2130.	4210.	0.	6340.	-274.93	0.0	0.0
13	0.9205	-1.290	-0.006	0.0	-558.	4169.	0.	4727.	-112.09	0.0	0.0
14	0.9631	-1.689	-0.021	0.0	-84.	3006.	0.	3090.	14.26	0.0	0.0
15	0.9877	-1.919	-0.032	0.0	-8.	1014.	0.	1022.	7.00	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

PSI = 180.00 DEG. REV = 3

N	X CEN	PHI	ALPHA	MACH. NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-22.541	-16.827	0.061	0.0	0.0	0.0	0.0	0.0	0.0	0.0760	2.2693	-0.1097	0.0
2	0.0972	-15.913	-9.504	0.084	-1.1572	0.0157	0.0125	-0.3748	0.1055	-0.1651	0.1631	0.9284	-1.6644	0.0
3	0.1502	-11.221	-3.396	0.115	-0.2386	0.0100	0.0005	-0.3331	0.0575	-0.4889	0.1435	0.1381	-1.4849	0.0
4	0.2167	-8.652	0.978	0.155	0.2311	0.0089	-0.0004	0.8286	-0.1746	-0.6803	0.1445	0.2607	-2.0967	0.0
5	0.3000	-7.425	2.124	0.206	0.3686	0.0088	-0.0001	2.4490	-0.4144	-1.5069	0.1814	0.2193	-1.9950	0.0
6	0.4000	-6.671	2.378	0.266	0.4206	0.0094	0.0014	4.6958	-0.7068	-1.8117	0.2300	0.1805	-1.9091	0.0
7	0.5000	-6.215	1.834	0.327	0.3750	0.0092	0.0036	6.3173	-0.8986	-1.4322	0.4030	0.3898	-1.9558	0.0
8	0.6000	-4.714	2.335	0.387	0.4560	0.0088	0.0071	10.7951	-1.1732	-0.2911	0.3695	0.7981	-1.8325	0.0
9	0.7000	-4.111	1.938	0.447	0.4122	0.0082	0.0057	13.0575	-1.2739	-0.5343	0.4134	1.3675	-1.5042	0.0
10	0.7727	-4.178	1.144	0.491	0.3120	0.0080	0.0041	11.9342	-1.2383	-2.9994	0.4603	1.4046	-1.4614	0.0
11	0.8144	-4.048	0.856	0.517	0.1734	0.0083	0.0007	7.3192	-0.9069	-4.2894	0.5264	0.8845	-1.3982	0.0
12	0.8617	-3.965	0.467	0.545	0.1286	0.0083	0.0003	6.0075	-0.8340	-4.4260	0.5645	0.9361	-1.3392	0.0
13	0.9205	-4.039	-0.195	0.581	0.0440	0.0083	-0.0006	2.3142	-0.6174	-4.8107	0.7747	1.0507	-1.6438	0.0
14	0.9631	-3.859	-0.442	0.619	0.0096	0.0083	-0.0016	0.5069	-0.4418	-3.8784	0.5762	-0.4646	-1.5580	0.0
15	0.9877	-3.746	-0.574	0.634	-0.0123	0.0084	-0.0022	-0.5840	-0.2973	-1.4080	0.2467	-0.9352	-1.7469	0.0

	QW1	QW2	QW3	QW4	QV1	QV2	QV3	QT1	QT2	QT3	BETA	DELTA	BETA-P1	BETA-P2
XI	0.219D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.179D-010.174D-030.0			0.0
Q**	0.139D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.522D-010.162D-020.0			0.0
Q*	0.314D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.141D-01-.197D-030.0			0.0
Q	-.648D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-.309D-02-.118D+000.0			0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	0.060	-0.006	0.0	622.	-252.	0.	874.	-882.34	0.0	0.0
2	0.0972	0.179	-0.020	0.0	2010.	-17.	0.	2027.	-871.94	0.0	0.0
3	0.1502	0.335	-0.046	0.0	3433.	35.	0.	3468.	-843.16	0.0	0.0
4	0.2167	0.516	-0.087	0.0	4458.	-122.	0.	4580.	-796.92	0.0	0.0
5	0.3000	0.708	-0.119	0.0	4603.	-192.	0.	4795.	-718.92	0.0	0.0
6	0.4000	0.861	-0.137	0.0	3382.	-515.	0.	3896.	-608.61	0.0	0.0
7	0.5000	0.885	-0.125	0.0	831.	-1287.	0.	2118.	-486.29	0.0	0.0
8	0.6000	0.727	-0.090	0.0	-3158.	-1620.	0.	4778.	-385.51	0.0	0.0
9	0.7000	0.360	-0.038	0.0	-5688.	330.	0.	6019.	-353.40	0.0	0.0
10	0.7727	-0.031	0.003	0.0	-5243.	2874.	0.	8117.	-357.25	0.0	0.0
11	0.8144	-0.296	0.025	0.0	-4094.	3861.	0.	7956.	-328.75	0.0	0.0
12	0.8617	-0.628	0.049	0.0	-2570.	4171.	0.	6741.	-269.83	0.0	0.0
13	0.9205	-1.073	0.072	0.0	-796.	4172.	0.	4969.	-180.61	0.0	0.0
14	0.9631	-1.405	0.084	0.0	-136.	3020.	0.	3156.	-89.75	0.0	0.0
15	0.9877	-1.597	0.089	0.0	-13.	1020.	0.	1033.	-27.10	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

PSI = 270.00 DEG.

REV = 3

222

N	X CEN	PHI	ALPHA	MACH NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-169.673	-156.365	0.149	0.0	0.0	0.0	0.0	0.0	0.0	-1.5841	2.3271	-0.3020	0.0
2	0.0972	-167.426	-153.423	0.125	0.6006	0.5592	0.3794	-0.5325	0.3096	1.0629	-2.4841	1.1597	0.0453	0.0
3	0.1502	-162.665	-147.245	0.095	0.5205	0.7394	0.4539	-0.6899	0.5185	3.7712	-2.1368	0.3989	0.8375	0.0
4	0.2167	-150.896	-133.672	0.058	0.3445	1.2195	0.5240	-0.4595	0.4416	3.7600	-2.3939	0.5870	-0.1321	0.0
5	0.3000	-87.471	-70.328	0.028	-0.4770	1.8800	0.4501	-0.2429	0.0528	0.7300	-3.1031	0.6479	0.4639	0.0
6	0.4000	-23.936	-7.294	0.068	-0.7121	0.0808	0.0695	-0.5034	0.1718	0.3994	-4.0145	0.7130	1.3028	0.0
7	0.5000	-15.148	0.494	0.127	0.2083	0.0091	0.0024	0.5107	-0.1705	-0.7224	-7.2238	1.2614	2.6684	0.0
8	0.6000	-10.898	3.744	0.187	0.5918	0.0099	0.0019	3.2136	-0.7089	-1.1003	-6.9875	1.5358	-1.8261	0.0
9	0.7000	-8.966	4.677	0.247	0.7018	0.0104	0.0027	6.7159	-1.2177	-1.3350	-8.1940	2.1150	-7.5295	0.0
10	0.7727	-8.374	4.541	0.291	0.6859	0.0103	0.0025	9.1365	-1.5523	-2.9307	-9.0959	2.1630	-8.1530	0.0
11	0.8144	-8.106	4.392	0.317	0.5469	0.0096	0.0048	8.6094	-1.4395	-2.2253	-9.9585	1.6896	-0.9371	0.0
12	0.8617	-8.021	4.004	0.345	0.5124	0.0090	0.0045	9.5497	-1.5765	-2.4071	-10.7004	1.7598	-1.1636	0.0
13	0.9205	-8.500	2.937	0.382	0.3961	0.0085	0.0037	9.0028	-1.5947	-2.5194	-14.5741	2.1233	1.0106	0.0
14	0.9631	-9.049	1.962	0.368	0.2760	0.0085	0.0033	5.4242	-0.9432	-2.9539	-10.0341	0.2753	18.4716	0.0
15	0.9877	-8.982	1.783	0.384	0.2569	0.0084	0.0032	4.1982	-0.7239	-8.9772	-3.8097	-0.6455	18.2657	0.0

QW1 QW2 QW3 QW4 QV1 QV2 QV3 QT1 QT2 QT3 BETA DELTA BETA-P1 BETA-P2

XI	-1.82D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.894D-020.160D-020.0	0.0
Q**	-1.05D-010.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.263D-010.384D-020.0	0.0
Q*	0.135D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.433D-010.157D-020.0	0.0
Q	0.438D-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.592D-01-.117D+000.0	0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	-0.040	0.009	0.0	-165.	3316.	0.	3481.	-114.87	0.0	0.0
2	0.0972	-0.119	0.030	0.0	1050.	3203.	0.	4254.	-118.77	0.0	0.0
3	0.1502	-0.220	0.061	0.0	2169.	3077.	0.	5246.	-165.78	0.0	0.0
4	0.2167	-0.338	0.105	0.0	2986.	3189.	0.	6175.	-238.66	0.0	0.0
5	0.3000	-0.464	0.143	0.0	3527.	2967.	0.	6495.	-286.45	0.0	0.0
6	0.4000	-0.565	0.169	0.0	3523.	2158.	0.	5680.	-326.85	0.0	0.0
7	0.5000	-0.583	0.163	0.0	2678.	476.	0.	3154.	-384.94	0.0	0.0
8	0.6000	-0.479	0.125	0.0	704.	-760.	0.	1464.	-383.45	0.0	0.0
9	0.7000	-0.238	0.058	0.0	-981.	441.	0.	1423.	-209.86	0.0	0.0
10	0.7727	0.020	-0.005	0.0	-1393.	2678.	0.	4071.	10.44	0.0	0.0
11	0.8144	0.196	-0.043	0.0	-1225.	3614.	0.	4840.	108.30	0.0	0.0
12	0.8617	0.417	-0.089	0.0	-802.	3973.	0.	4775.	156.43	0.0	0.0
13	0.9205	0.713	-0.144	0.0	-122.	4122.	0.	4244.	195.68	0.0	0.0
14	0.9631	0.935	-0.182	0.0	43.	3015.	0.	3058.	142.91	0.0	0.0
15	0.9877	1.063	-0.202	0.0	8.	1019.	0.	1027.	40.56	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

PSI = 360.00 DEG. REV = 3

N	X CEN	PHI	ALPHA	MACH NO.	CL	CD	CM	SAZ5	SAY5	MAX5	SDZ5	SDY5	MDX5	MEX9
1	0.0576	-61.365	-51.847	0.030	0.0	0.0	0.0	0.0	0.0	0.0	-2.1615	2.1811	-0.3409	0.0
2	0.0972	-34.790	-24.576	0.046	-1.2305	0.4259	0.1211	-0.1296	0.0352	-0.0001	-3.2795	0.9198	0.5126	0.0
3	0.1502	-20.915	-9.284	0.075	-1.1179	0.0155	0.0121	-0.6351	0.2238	-0.4961	-2.8142	0.1796	1.4894	0.0
4	0.2167	-15.645	-2.211	0.115	-0.1065	0.0093	0.0003	-0.2103	0.0371	0.0898	-3.1966	0.3245	0.4328	0.0
5	0.3000	-13.095	0.259	0.165	0.1629	0.0092	0.0009	0.6819	-0.1939	0.2728	-4.1593	0.3026	1.1872	0.0
6	0.4000	-11.002	1.851	0.226	0.3586	0.0093	0.0014	2.8422	-0.6122	0.3523	-5.3919	0.2684	2.2681	0.0
7	0.5000	-8.568	3.285	0.285	0.5377	0.0098	0.0020	6.8726	-1.1340	0.6341	-9.7266	0.4752	4.0858	0.0
8	0.6000	-7.083	3.770	0.345	0.6148	0.0097	0.0051	11.5610	-1.5834	1.7078	-9.4569	0.7891	-1.8048	0.0
9	0.7000	-6.155	3.698	0.405	0.6304	0.0095	0.0086	16.3922	-1.9712	3.6783	-11.1368	1.2577	-9.3876	0.0
10	0.7727	-5.707	3.419	0.449	0.5984	0.0092	0.0062	19.1326	-2.1625	0.4621	-12.3570	1.2303	-10.2312	0.0
11	0.8144	-5.499	3.210	0.475	0.4653	0.0086	0.0022	16.5948	-1.8687	-0.7389	-13.4713	0.6864	-0.7691	0.0
12	0.8617	-5.348	2.888	0.503	0.4357	0.0085	0.0015	17.3710	-1.9334	-1.0864	-14.4773	0.6921	-1.0803	0.0
13	0.9205	-5.400	2.249	0.539	0.3685	0.0086	0.0016	16.8489	-1.9590	-0.7306	-19.7042	0.6853	1.8933	0.0
14	0.9631	-5.290	1.932	0.403	0.2785	0.0083	0.0031	6.6159	-0.7016	-1.4626	-13.4592	-0.6944	24.8947	0.0
15	0.9877	-4.945	2.032	0.418	0.2955	0.0083	0.0028	5.7898	-0.5753	-10.8306	-5.0403	-1.0029	24.6990	0.0

	QW1	QW2	QW3	QW4	QV1	QV2	QV3	QT1	QT2	QT3	BETA	DELTA	BETA-P1	BETA-P2
XI	-.1330-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6450-03-.1780-020.0		0.0	0.0
Q**	-.7520-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1630-02-.5730-020.0		0.0	0.0
Q*	-.5410-030.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-.6000-020.1150-020.0		0.0	0.0
Q	0.2110-020.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8020-01-.1120+000.0		0.0	0.0

N	X CEN	VERTICAL DEFL-IN	INPLANE DEFL-IN	TORSION DEFL-DEG	FLATWISE STRESS	EDGEWISE STRESS	TORSION STRESS	CORNER STRESS	TORSION MOMENT	A	B
1	0.0576	-0.019	0.003	0.0	1202.	434.	0.	1636.	227.68	0.0	0.0
2	0.0972	-0.058	0.010	0.0	3286.	735.	0.	4021.	226.00	0.0	0.0
3	0.1502	-0.108	0.022	0.0	5360.	1113.	0.	6474.	211.70	0.0	0.0
4	0.2167	-0.166	0.040	0.0	6890.	1715.	0.	8605.	194.34	0.0	0.0
5	0.3000	-0.228	0.054	0.0	7365.	1906.	0.	9271.	165.54	0.0	0.0
6	0.4000	-0.277	0.063	0.0	5960.	1431.	0.	7391.	104.27	0.0	0.0
7	0.5000	-0.286	0.060	0.0	2989.	-35.	0.	3024.	-4.47	0.0	0.0
8	0.6000	-0.235	0.045	0.0	-1132.	-1137.	0.	2489.	-76.00	0.0	0.0
9	0.7000	-0.116	0.020	0.0	-4311.	224.	0.	4535.	7.99	0.0	0.0
10	0.7727	0.010	-0.002	0.0	-4478.	2577.	0.	7055.	159.30	0.0	0.0
11	0.8144	0.096	-0.015	0.0	-3696.	3570.	0.	7265.	232.39	0.0	0.0
12	0.8617	0.204	-0.029	0.0	-2431.	3965.	0.	6396.	258.44	0.0	0.0
13	0.9205	0.348	-0.047	0.0	-697.	4121.	0.	4818.	265.57	0.0	0.0
14	0.9631	0.456	-0.058	0.0	-27.	3012.	0.	3039.	175.21	0.0	0.0
15	0.9877	0.518	-0.063	0.0	3.	1017.	0.	1020.	47.83	0.0	0.0

PUSH-ROD (RELATIVE) DEFL. = 0.0 IN

PUSH-ROD LOAD = 0.0 LB

TORQUE-TUBE ROOT DEFL. = 0.0 IN

TORQUE-TUBE ROOT SHEAR = 0.0 LB

# AERODYNAMIC PERFORMANCE AND STRESSES

224

	H. FORCE	Y. FORCE	THRUST	ROLL. MOM.	PITCH MOM.	TORQUE	LIFT	PROP. FORCE	HORSEPOWER	EQU. DRAG
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C( )	-0.00008182	0.00001928	0.00287268	0.00000279	-0.00005258	0.00027605	0.00283909	0.00044559		
C( )/SIG	-0.00108749	0.00025620	0.03818020	0.00003706	-0.00069881	0.00366899	0.03773376	0.00592226		
DIMENS.	-134.80	31.76	4732.62	101.07	-1905.65	10005.36	4677.28	734.09	558.15	768.38

A15	B15	A25	B25	THETA 75	LAMBDA	MU	VEL ACT.	EQU. L/D	PAR. AREA	ALPHA S
-2.500	5.869	0.0	0.0	8.540	-0.03840	0.300	120.97	6.087	15.480	-7.288

N	X CEN	/ MEDIAN STRESSES /		/ 1/2 PTP STRESSES /		/ MAX CORNER / STRESSES	/ TORSION MOMENTS /	
		FLATWISE	EDGEWISE	FLATWISE	EDGEWISE		MEDIAN	1/2 PEP

1	0.0576	421.	1820.	1275.	5871.	8534.	-224.	661.03
2	0.0972	2173.	1887.	1650.	5589.	8153.	-219.	655.99
3	0.1502	3615.	1927.	2261.	5183.	9297.	-207.	640.27
4	0.2167	4491.	2058.	2606.	4676.	10243.	-188.	613.51
5	0.3000	4495.	1904.	2887.	4060.	10492.	-168.	557.33
6	0.4000	3123.	1235.	3081.	3278.	8703.	-156.	465.24
7	0.5000	844.	-82.	2507.	2316.	4701.	-189.	349.56
8	0.6000	-1496.	-954.	2318.	1475.	5871.	-237.	285.00
9	0.7000	-3240.	560.	2994.	830.	6351.	-200.	300.65
10	0.7727	-3353.	2884.	2697.	482.	8651.	-135.	349.53
11	0.8144	-2870.	3799.	2210.	331.	8750.	-77.	368.40
12	0.8617	-1984.	4096.	1483.	183.	7531.	-31.	352.31
13	0.9205	-671.	4149.	589.	44.	5402.	54.	279.47
14	0.9631	-106.	3019.	158.	15.	3275.	63.	169.00
15	0.9877	-9.	1019.	18.	5.	1045.	21.	49.01

PUSH-ROD LOAD (MEDIAN, 1/2 PTP:	0.0	0.0
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# HARMONIC ANALYSIS OF BLADE RESPONSES

	A0	1	2	3	4	5	6	7	8	9	10
BETA											
	4.394D-02	-4.351D-02	4.899D-03	1.708D-03	4.423D-04	1.222D-04	2.234D-05	1.490D-05	7.600D-06	2.742D-06	5.679D-06
	1.053D-02	-2.287D-03	-3.000D-04	4.622D-05	1.778D-07	6.577D-06	1.204D-05	1.206D-05	5.105D-06	-1.049D-06	
	4.476D-02	5.406D-03	1.734D-03	4.447D-04	1.222D-04	2.329D-05	1.916D-05	1.426D-05	5.795D-06	5.775D-06	
	-76.4	115.0	100.0	84.0	89.9	73.6	51.1	32.2	28.2	100.5	
	1.000	0.121	0.039	0.010	0.003	0.001	0.000	0.000	0.000	0.000	
LEAD											
	-1.159D-01	-2.125D-03	-3.707D-04	-8.136D-05	2.819D-05	3.217D-05	4.223D-05	3.822D-05	3.864D-05	4.188D-05	4.142D-05
	-5.175D-04	3.735D-05	2.840D-04	1.370D-04	7.463D-05	6.762D-05	5.805D-05	4.534D-05	3.858D-05	3.378D-05	
	2.187D-03	3.725D-04	2.954D-04	1.399D-04	8.127D-05	7.973D-05	6.950D-05	5.957D-05	5.694D-05	5.345D-05	
	256.3	-84.2	-16.0	11.6	23.3	32.0	33.4	40.4	47.3	50.8	
	1.000	0.170	0.135	0.064	0.037	0.036	0.032	0.027	0.026	0.024	
QW1											
	-1.856D-03	-3.515D-03	1.984D-04	-7.874D-04	1.055D-04	4.201D-05	4.343D-05	-4.071D-05	-2.006D-05	8.719D-06	3.855D-06
	5.354D-03	-8.200D-05	-8.982D-04	-2.121D-04	-1.462D-04	-1.417D-05	1.602D-05	-1.756D-05	-1.004D-05	1.886D-06	
	6.405D-03	2.146D-04	1.194D-03	2.369D-04	1.521D-04	4.568D-05	4.375D-05	2.666D-05	1.330D-05	4.292D-06	
	-33.3	112.5	221.2	153.5	164.0	108.1	-68.5	228.8	139.0	63.9	
	1.000	0.034	0.187	0.037	0.024	0.007	0.007	0.004	0.002	0.001	

## HARMONIC ANALYSIS OF HUB SHEARS AND MOMENTS

226	A0	1	2	3	4	5	6	7	8	9	10
LONG. SHR	-8.	-26450.	54.	-1.	2.	3.	-5.	-2.	-1.	-0.	-0.
		-3047.	91.	14.	14.	2.	3.	1.	-0.	1.	-0.
		26625.	106.	14.	14.	4.	6.	2.	1.	1.	0.
		263.43	30.69	-2.17	9.15	58.40	-55.86	-62.57	246.66	-5.75	192.84
		1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LAT. SHR	2.	3083.	-85.	-7.	-13.	-2.	0.	1.	2.	0.	1.
		-26443.	47.	2.	1.	5.	-3.	1.	1.	1.	1.
		26623.	98.	7.	13.	5.	3.	1.	2.	1.	1.
		173.35	-61.13	-74.10	-86.06	-18.13	176.74	31.37	53.58	20.47	59.85
		1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VERT. SHR	1093.34	-981.08	152.73	109.91	4.04	5.47	-4.16	-3.70	0.56	3.17	2.03
		45.56	-47.45	48.85	14.50	7.84	6.62	-0.54	-6.22	-1.78	-1.54
		982.14	159.93	120.27	15.05	9.56	7.82	3.74	6.24	3.64	2.55
		-87.34	107.26	66.04	15.55	34.89	-32.13	261.68	174.82	119.34	127.14
		1.00	0.16	0.12	0.02	0.01	0.01	0.00	0.01	0.00	0.00
ROLL MOMT	42.	-25.	-8.	28.	-12.	0.	-3.	-4.	-1.	2.	2.
		-903.	-465.	50.	36.	0.	4.	-2.	-3.	-1.	0.
		903.	465.	58.	38.	0.	5.	5.	3.	2.	2.
		181.60	180.97	29.36	-17.92	58.16	-36.96	250.99	190.64	110.03	80.67
		1.00	0.52	0.06	0.04	0.00	0.01	0.01	0.00	0.00	0.00
PITCH MOMT	-409.	761.	360.	-60.	-40.	3.	-1.	1.	0.	-0.	-3.
		16.	-49.	15.	-20.	-9.	-2.	2.	1.	3.	0.
		762.	363.	62.	44.	9.	2.	3.	1.	3.	3.
		88.81	97.69	-75.89	243.93	159.80	195.08	30.47	26.26	-5.29	-84.52
		1.00	0.48	0.08	0.06	0.01	0.00	0.00	0.00	0.00	0.00
YAW MOMT	-2986.	-65.	72.	-52.	35.	-41.	-37.	17.	-7.	9.	5.
		403.	-45.	98.	77.	-42.	5.	1.	-5.	-9.	-8.
		408.	85.	111.	85.	59.	38.	17.	9.	13.	9.
		-9.23	122.42	-28.15	24.38	224.40	-81.99	85.05	236.79	135.95	146.90
		1.00	0.21	0.27	0.21	0.14	0.09	0.04	0.02	0.03	0.02

## HARMONIC ANALYSIS OF FLATWISE STRESSES

N	X CEN	A0	1	2	3	4	5	6	7	8	9	10
1	0.0576	453.	-205. -745. 773. 195.4 1.000	-424. -10. 424. 268.7 0.548	-28. -249. 250. 186.3 0.324	-105. -149. 182. 215.3 0.236	-8. 79. 79. -6.1 0.102	98. -66. 118. 123.8 0.153	9. -19. 21. 155.8 0.027	-0. 50. 50. -0.3 0.065	-31. 23. 39. -53.1 0.050	-16. 27. 31. -30.4 0.040
2	0.0972	1943.	-267. -868. 909. 197.1 1.000	-710. -56. 712. 265.5 0.784	-279. -397. 485. 215.1 0.534	-71. -179. 193. 201.5 0.212	-47. 72. 86. -33.4 0.095	124. -125. 176. 135.2 0.194	74. -18. 76. 104.0 0.084	9. 130. 131. 3.9 0.144	-68. 52. 86. -52.6 0.094	-36. 42. 55. -41.2 0.061
3	0.1502	3358.	-276. -924. 964. 196.6 0.882	-1086. -122. 1093. 263.6 1.000	-550. -532. 766. 225.9 0.700	-35. -201. 204. 190.0 0.186	-95. 73. 120. -52.2 0.110	159. -190. 248. 140.1 0.227	158. -15. 158. 95.5 0.145	24. 229. 231. 5.9 0.211	-109. 88. 140. -50.9 0.128	-58. 61. 85. -43.7 0.077
4	0.2167	4261.	-250. -646. 693. 201.2 0.463	-1485. -195. 1497. 262.5 1.000	-809. -549. 978. 235.9 0.653	-37. -170. 174. 192.3 0.116	-147. 61. 159. -67.5 0.106	192. -234. 302. 140.6 0.202	227. -5. 227. 91.4 0.152	25. 306. 307. 4.6 0.205	-127. 108. 167. -49.6 0.111	-75. 80. 110. -43.2 0.073
5	0.3000	4342.	-224. 123. 255. -61.1 0.155	-1629. -212. 1643. 262.6 1.000	-1015. -379. 1084. 249.5 0.660	-118. -62. 133. 242.1 0.081	-182. -19. 183. 264.1 0.111	189. -243. 308. 142.2 0.187	238. 10. 238. 87.6 0.145	-17. 289. 290. -3.3 0.176	-107. 79. 133. -53.8 0.081	-81. 85. 118. -43.7 0.072
6	0.4000	3160.	-225. 1105. 1128. -11.5 0.897	-1256. -73. 1258. 266.7 1.000	-961. -189. 979. 258.9 0.778	-305. 22. 306. -85.8 0.243	-170. -124. 210. 234.0 0.167	99. -196. 219. 153.2 0.174	128. 28. 131. 77.6 0.104	-95. 165. 190. -29.9 0.151	-51. 15. 53. -73.5 0.042	-57. 71. 91. -39.0 0.072
7	0.5000	1017.	-380. 1810. 1850. -11.9 1.000	-517. 148. 538. -74.0 0.291	-647. -112. 656. 260.2 0.355	-358. 31. 360. -85.0 0.194	-99. -127. 161. 218.0 0.087	-14. -99. 100. 188.3 0.054	-19. 32. 37. -30.4 0.020	-122. -16. 123. 262.4 0.066	-0. -42. 42. 180.4 0.023	-9. 20. 22. -23.9 0.012
8	0.6000	-1817.	-618. 2088. 2178. -16.5 1.000	501. 172. 530. 71.1 0.243	-208. -3. 208. 269.3 0.096	-33. -25. 42. 233.6 0.019	-61. -50. 79. 230.4 0.036	-19. 24. 31. -38.7 0.014	-90. 61. 109. -56.0 0.050	-43. -117. 125. 200.1 0.057	29. -38. 48. 142.2 0.022	29. -33. 44. 139.3 0.020
9	0.7000	-3603.	-757. 1958. 2099. -21.1 1.000	1165. -53. 1166. 92.6 0.556	89. 91. 127. 44.5 0.061	295. -146. 329. 116.4 0.157	42. 12. 44. 74.2 0.021	-54. 116. 128. -24.8 0.061	-66. 30. 73. -65.9 0.035	56. -90. 106. 147.8 0.050	34. -35. 49. 136.0 0.023	62. -56. 84. 132.2 0.040

228

10	0.7727	-3536.	-649.	1106.	210.	303.	144.	-98.	-64.	95.	30.	49.
			1578.	-269.	103.	-198.	17.	148.	-19.	-54.	-21.	-51.
			1706.	1138.	234.	362.	145.	178.	67.	109.	37.	71.
			-22.3	103.7	63.8	123.2	83.2	-33.5	253.3	119.8	124.5	136.5
			1.000	0.667	0.137	0.212	0.085	0.104	0.039	0.064	0.022	0.042
11	0.8144	-2851.	-490.	900.	210.	206.	170.	-93.	-79.	102.	28.	17.
			1189.	-335.	123.	-194.	-10.	150.	-41.	-50.	6.	-43.
			1286.	960.	244.	283.	170.	177.	89.	114.	29.	46.
			-22.4	110.4	59.7	133.3	93.5	-31.9	242.3	116.3	78.2	158.0
			1.000	0.747	0.189	0.220	0.132	0.138	0.069	0.088	0.023	0.036
12	0.8617	-1844.	-294.	599.	152.	83.	144.	-65.	-83.	84.	25.	-11.
			762.	-319.	127.	-149.	-34.	125.	-43.	-49.	27.	-27.
			817.	679.	198.	171.	148.	141.	94.	97.	37.	30.
			-21.1	118.0	50.1	150.8	103.4	-27.5	242.5	120.4	43.1	202.6
			1.000	0.831	0.242	0.209	0.181	0.172	0.115	0.119	0.045	0.036
13	0.9205	-536.	-104.	225.	23.	-20.	54.	-21.	-40.	30.	14.	-10.
			311.	-162.	95.	-63.	-24.	54.	-15.	-25.	14.	-2.
			327.	278.	97.	66.	59.	58.	43.	39.	20.	10.
			-18.5	125.8	13.9	197.3	113.6	-21.2	249.2	129.5	43.2	258.5
			1.000	0.848	0.297	0.200	0.181	0.177	0.131	0.120	0.061	0.030
14	0.9631	-63.	-49.	35.	-10.	-19.	8.	-5.	-10.	6.	3.	-3.
			95.	-32.	32.	-13.	-6.	13.	-3.	-7.	3.	2.
			107.	47.	33.	23.	10.	14.	11.	9.	5.	4.
			-27.3	132.4	-17.2	234.6	126.3	-22.4	252.8	139.4	44.0	-66.5
			1.000	0.438	0.311	0.217	0.091	0.132	0.102	0.085	0.045	0.035
15	0.9877	-4.	-7.	3.	-2.	-3.	1.	-1.	-1.	1.	0.	-0.
			11.	-3.	4.	-1.	-1.	1.	-0.	-1.	0.	0.
			13.	4.	4.	3.	1.	2.	1.	1.	1.	0.
			-30.0	135.1	-22.6	240.6	132.0	-24.1	252.9	141.6	43.5	-63.9
			1.000	0.327	0.311	0.220	0.069	0.121	0.094	0.077	0.040	0.036

## PUSH-ROD LOAD

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

# APPENDIX H. E927 SAMPLE INPUT

START	COL	1	2	3	4	5	6	7	8
2	5	1	.002378	1116.	.99	.0	258.		0001
2	3	6	26.833333	1.25	4.				0002
2	5	13	0.0	1000000.	15.1265	7.25	.35		0003
2	2	19	258.0	1.					0004
2	3	107	1.	0.	1.				0005
2	1	111	1.						0006
2	3	113	11000111.	1.	11.				0007
2	1	119	5.						0008
2	1	125	1.						0009
2	5	126	27.074	11.238	9.178	6.82	.355		0010
2	3	131	-1.	676.	0.				0011
2	1	200	20.						0012
2	5	201	17.5	17.5	25.	16.8	16.8		0013
2	5	206	16.8	16.8	16.8	17.49	17.49		0014
2	5	211	17.49	17.49	15.9	15.9	15.9		0015
2	5	216	12.97	12.97	7.7	7.7	4.		0016
2	1	250	20.						0017
2	4	251	.0	.0	15.	.0			0018
2	4	255	15.01	8.3	50.	8.3			0019
2	4	259	50.01	20.76	228.96	20.76			0020
2	4	263	228.97	22.317	276.66	22.317			0021
2	4	267	276.67	20.76	322.	20.76			0022
2	1	350	14.						0023
2	4	351	0.	-9.5	50.	-9.5			0024
2	4	355	270.	1.2	290.	2.8			0025
2	4	359	305.	3.8	318.	1.2			0026
2	2	363	322.	1.2					0027
2	1	450	14.						0028
2	4	451	0.	-9.5	50.	-9.5			0029
2	4	455	270.	1.2	290.	2.8			0030
2	4	459	305.	3.8	318.	1.2			0031
2	2	463	322.	1.2					0032
2	1	550	58.						0033
2	4	551	.0	.0	58.	.0			0034
2	4	555	75.	-.822	159.	-.822			0035
2	4	559	159.01	-.667	192.	-.667			0036
2	4	563	192.01	-.4685	210.	-.4685			0037
2	4	567	210.01	-.6754	220.	-.6754			0038
2	4	571	220.01	-.6992	224.	-.6858			0039
2	4	575	228.96	.5569	228.97	.2788			0040
2	4	579	240.	.2992	270.3	.3102			0041
2	4	583	270.31	.008	276.66	.0120			0042
2	4	587	276.67	.368	239.	.368			0043
2	4	591	290.	1.2335	291.	2.099			0044
2	4	595	299.	2.099	299.5	2.1247			0045
2	4	599	301.25	1.7292	303.75	.8992			0046
2	4	603	306.695	.3395	318.	-5.			0047
2	2	607	322.	-6.456					0048
2	1	650	18.						0049
2	4	651	.0	.0	50.	.0			0050
2	4	655	50.01	-.35	228.96	-.35			0051
2	4	659	228.97	.0	276.66	.0			0052
2	4	663	276.67	-.35	302.6	-.35			0053
2	2	667	322.	-7.411					0054

START		COL							
		1	2	3	4	5	6	7	8
2	1 750 20.								0055
2	4 751 .0		.0	15.		.0			0056
2	4 755 15.01		-2.075	50.		-2.075			0057
2	4 759 50.01		-5.19	228.96		-5.19			0058
2	4 763 228.97		-5.58	276.66		-5.58			0059
2	4 767 276.67		-5.19	322.		-5.19			0060
2	1 950 52.								0061
2	4 951 .0		15.	3.0097		15.			0062
2	4 955 2.07		5.	2.17		7.5			0063
2	4 959 2.10		.25	.9		4.75			0064
2	4 963 .93		10.	.53		17.5			0065
2	4 967 .56		10.	.55		10.			0066
2	4 971 .53		64.	.5615		33.			0067
2	4 975 .5812		32.	.7354		46.3			0068
2	4 979 .69551		6.36	.68		13.34			0069
2	4 983 1.51		2.5	1.3		6.35			0070
2	4 987 1.61447		1.15	1.16447		2.5			0071
2	4 991 1.46447		2.5	1.06447		3.39			0072
2	4 995 .75		1.61	1.25		2.5			0073
2	4 999 .25		5.5	.14		4.			0074
2	11050 34.								0075
2	21051 0.		15.						0076
2	41053 55.02		8.3	98.04		2.8			0077
2	41057 644.2		3.9	207.		5.1			0078
2	41061 532.5		4.9	390.		5.83			0079
2	41065 443.		11.17	480.		18.			0080
2	41069 650.		10.	850.		74.			0081
2	41073 900.		41.	820.		5.			0082
2	41077 830.		15.	670.		20.			0083
2	41081 590.		30.3	530.		51.7			0084
2	11150 34.								0085
2	21151 0.		15.						0086
2	41153 55.02		8.3	98.04		2.8			0087
2	41157 305.5		3.9	360.		5.1			0088
2	41161 237.		7.5	57.		1.5			0089
2	41165 54.		3.8	41.		9.3			0090
2	41169 24.37		17.8	23.43		84.			0091
2	41173 25.43		3.	27.43		38.			0092
2	41177 27.19		40.	26.95		30.3			0093
2	41181 24.95		1.7	22.95		50.			0094
2	11350 32.								0095
2	41351 .0		15.	.00269		8.3			0096
2	41355 .00479		2.8	.00823		3.9			0097
2	41359 .01842		15.83	.02398		29.17			0098
2	41363 .0318		84.	.03474		61.			0099
2	41367 .03971		8.96	.0465		11.04			0100
2	41371 .04354		36.66	.03381		12.34			0101
2	41375 .06848		2.	.05061		8.			0102
2	41379 .05723		9.5	.03805		13.5			0103
2	11450 32.								0104
2	41451 0.		15.	.00269		8.3			0105
2	41455 .00479		2.8	.00823		3.9			0106
2	41459 .01842		15.83	.02398		29.17			0107
2	41463 .0318		84.	.03474		61.			0108

START						
COL	1	2	3	4	5	6
2	41467	.03971	8.96	.0465	11.04	0109
2	41471	.04354	36.66	.03381	12.34	0110
2	41475	.06848	2.	.05861	8.	0111
2	41479	.05723	9.5	.03305	13.5	0112
2	11550	12.				0113
2	41551	0.	15.	70320000.	31.	0114
2	41555	47660000.	10.	25600000.	9.5	0115
2	41559	27050000.	9.5	27870000.	247.	0116
2	11773	50000.				0117
2	21779	17.4	10.75			0118
2	41850	32.0000	.0000	-180.0000	.0200	0119
2	41854	-179.0000	.0250	-175.0000	.0650	0120
2	41858	-172.0000	.1100	-150.0000	.6420	0121
2	41862	-115.0000	1.8800	-65.0000	1.8800	0122
2	41866	-30.0000	.6300	-30.0000	.6300	0123
2	41870	-10.0000	.2500	-7.0000	.0060	0124
2	41874	-6.0000	.0500	-5.6000	.0390	0125
2	41878	-4.8000	.0280	-4.0000	.0180	0126
2	41882	-3.0000	.0110	.0000	.0090	0127
2	41886	4.0000	.0100	9.0000	.0130	0128
2	41890	10.0000	.0140	11.0000	.0160	0129
2	41894	12.0000	.0220	13.0000	.0300	0130
2	41898	14.0000	.0640	16.3000	.1780	0131
2	41902	29.9000	.6300	30.0000	.6300	0132
2	41906	65.0000	1.8800	150.0000	.6420	0133
2	41910	172.0000	.1100	175.0000	.0650	0134
2	41914	180.0000	.0200	.0000	.0000	0135
2	41925	32.0000	.3000	-180.0000	.0200	0136
2	41929	-179.0000	.0250	-175.0000	.0650	0137
2	41933	-172.0000	.1100	-150.0000	.6420	0138
2	41937	-115.0000	1.8800	-65.0000	1.8800	0139
2	41941	-30.0000	.6300	-30.0000	.6300	0140
2	41945	-10.0000	.2500	-7.0000	.0060	0141
2	41949	-6.0000	.0500	-5.6000	.0390	0142
2	41953	-4.8000	.0280	-4.0000	.0180	0143
2	41957	-3.0000	.0110	.0000	.0090	0144
2	41961	4.0000	.0100	9.0000	.0130	0145
2	41965	10.0000	.0140	11.0000	.0180	0146
2	41969	12.0000	.0220	13.0000	.0300	0147
2	41973	14.0000	.0640	16.3000	.1780	0148
2	41977	29.9000	.6300	30.0000	.6300	0149
2	41981	65.0000	1.8800	150.0000	.6420	0150
2	41985	172.0000	.1100	175.0000	.0650	0151
2	41989	180.0000	.0200	.0000	.0000	0152
2	42000	19.0000	.4000	-30.0000	.6300	0153
2	42004	-10.0000	.2600	-7.0000	.1010	0154
2	42008	-6.0000	.0620	-5.0000	.0340	0155
2	42012	-4.5000	.0200	-4.0000	.0130	0156
2	42016	-3.0000	.0100	-2.0000	.0080	0157
2	42020	1.0000	.0080	3.0000	.0090	0158
2	42024	6.0000	.0110	8.0000	.0150	0159
2	42028	9.0000	.0175	10.0000	.0270	0160
2	42032	11.0000	.0500	12.8000	.1360	0161
2	42036	15.0000	.2300	30.0000	.6300	0162

START		COL							
		1	2	3	4	5	6	7	8
2	42075	19.0000	.5000	-30.0000	.6300				0163
2	42079	-10.0000	.2700	-7.0000	.1060				0164
2	42083	-6.0000	.0700	-5.0000	.0380				0165
2	42087	-4.0000	.0240	-3.0000	.0150				0166
2	42091	-2.0000	.0100	-1.0000	.0085				0167
2	42095	.0000	.0030	2.0000	.0080				0168
2	42099	4.0000	.0095	5.0000	.0110				0169
2	42103	6.0000	.0180	7.0000	.0270				0170
2	42107	8.0000	.0440	12.0000	.1780				0171
2	42111	15.0000	.2800	30.0000	.6300				0172
2	42150	20.0000	.6000	-30.0000	.6300				0173
2	42154	-10.0000	.2880	-8.0000	.1370				0174
2	42158	-6.0000	.0810	-5.0000	.0450				0175
2	42162	-4.6000	.0350	-4.0000	.0250				0176
2	42166	-3.0000	.0170	-2.0000	.0120				0177
2	42170	-1.0000	.0085	.0000	.0080				0178
2	42174	1.0000	.0080	2.0000	.0100				0179
2	42178	3.0000	.0160	4.0000	.0250				0180
2	42182	5.0000	.0380	6.0000	.0600				0181
2	42186	10.5000	.1760	15.0000	.3000				0182
2	42190	30.0000	.6300	11.0000	.0180				0183
2	42225	14.0000	.7000	-30.0000	.6300				0184
2	42229	-10.0000	.3100	-7.0000	.1550				0185
2	42233	-6.0000	.0940	-5.0000	.0600				0186
2	42237	-3.0000	.0270	-2.0000	.0130				0187
2	42241	-1.0000	.0100	.0000	.0100				0188
2	42245	1.0000	.0115	2.0000	.0250				0189
2	42249	8.0000	.1600	15.0000	.3200				0190
2	42253	30.0000	.6300	4.0000	.0250				0191
2	42300	15.0000	.7500	-30.0000	.6300				0192
2	42304	-10.0000	.3260	-7.0000	.1680				0193
2	42308	-6.0000	.1090	-5.0000	.0650				0194
2	42312	-2.4000	.0200	-2.0000	.0150				0195
2	42316	-1.0000	.0120	.0000	.0135				0196
2	42320	1.0000	.0240	4.0000	.0950				0197
2	42324	6.0000	.1340	7.2000	.1550				0198
2	42328	15.0000	.3300	30.0000	.6300				0199
2	42375	20.0000	.8000	-30.0000	.6300				0200
2	42379	-12.0000	.2900	-10.0000	.2250				0201
2	42383	-8.0000	.1700	-6.0000	.1220				0202
2	42387	-4.0000	.0750	-3.0000	.0420				0203
2	42391	-2.0000	.0280	-1.0000	.0260				0204
2	42395	-.5000	.0255	.0000	.0250				0205
2	42399	.5000	.0350	1.0000	.0420				0206
2	42403	2.0000	.0700	4.0000	.1080				0207
2	42407	6.0000	.1480	8.0000	.1850				0208
2	42411	10.0000	.2300	12.0000	.2850				0209
2	42415	30.0000	.6300	11.0000	.0180				0210
2	42450	17.0000	.9000	-30.0000	.6300				0211
2	42454	-12.0000	.3300	-10.0000	.2620				0212
2	42458	-8.0000	.2100	-6.0000	.1630				0213
2	42462	-4.0000	.1150	-2.0000	.0660				0214
2	42466	-1.0000	.0630	.0000	.0600				0215
2	42470	1.0000	.0780	2.0000	.1000				0216



START							
COL		1	2	3	4	5	6
2	42474	4.0000	.1380	6.0000	.1820		0217
2	42478	8.0000	.2210	10.0000	.2620		0218
2	42482	12.0000	.3225	30.0000	.6300		0219
2	42525	15.0000	1.0000	-30.0000	.6300		0220
2	42529	-12.0000	.3700	-10.0000	.2970		0221
2	42533	-8.0000	.2400	-6.0000	.2020		0222
2	42537	-4.0000	.1520	-2.0000	.1170		0223
2	42541	.0000	.1000	2.0000	.1360		0224
2	42545	4.0000	.1700	6.0000	.2150		0225
2	42549	8.0000	.2550	10.0000	.2930		0226
2	42553	12.0000	.3630	30.0000	.6300		0227
2	42600	15.0000	2.0000	-30.0000	.6300		0228
2	42604	-12.0000	.3620	-10.0000	.2970		0229
2	42608	-8.0000	.2400	-6.0000	.2020		0230
2	42612	-4.0000	.1520	-2.0000	.1170		0231
2	42616	.0000	.1000	2.0000	.1360		0232
2	42620	4.0000	.1700	6.0000	.2150		0233
2	42624	8.0000	.2550	10.0000	.2930		0234
2	42628	12.0000	.3425	30.0000	.6300		0235
2	42750	26.0000	.0000	-180.0000	.0000		0236
2	42754	-172.0000	.7800	-160.0000	.6400		0237
2	42758	-158.0000	.6600	-30.0000	-1.0000		0238
2	42762	-10.0000	-.8900	-7.5000	-.7300		0239
2	42766	-6.7000	-.6000	-5.0000	-.4400		0240
2	42770	5.0000	.7400	10.0000	1.3000		0241
2	42774	11.0000	1.3800	12.0000	1.4400		0242
2	42778	13.0000	1.4900	14.0000	1.5300		0243
2	42782	15.2000	1.2100	19.0000	1.0800		0244
2	42786	30.0000	1.0000	30.1000	1.0000		0245
2	42790	149.9000	-.9500	150.0000	-.9500		0246
2	42794	156.0000	-.7000	158.0000	-.6600		0247
2	42798	160.0000	-.6400	172.0000	-.7800		0248
2	42802	180.0000	.0000	.0000	.0000		0249
2	42825	26.0000	.3000	-180.0000	.0000		0250
2	42829	-172.0000	.7800	-160.0000	.6400		0251
2	42833	-158.0000	.6600	-30.0000	-1.0000		0252
2	42837	-10.0000	-.8000	-7.5000	-.7300		0253
2	42841	-6.7000	-.6000	-5.0000	-.4400		0254
2	42845	5.0000	.7400	10.0000	1.3000		0255
2	42849	11.0000	1.3800	12.0000	1.4400		0256
2	42853	13.0000	1.4900	14.0000	1.5300		0257
2	42857	15.2000	1.2100	19.0000	1.0800		0258
2	42861	30.0000	1.0000	30.1000	1.0000		0259
2	42865	149.9000	-.9500	150.0000	-.9500		0260
2	42869	156.0000	-.7000	158.0000	-.6600		0261
2	42873	160.0000	-.6400	172.0000	-.7800		0262
2	42877	180.0000	.0000	.0000	.0000		0263
2	42900	13.0000	.4000	-30.0000	-1.0000		0264
2	42904	-10.0000	-.7400	-8.6000	-.7100		0265
2	42908	-7.0000	-.6400	-5.0000	-.4500		0266
2	42912	7.0000	1.0400	8.0000	1.1500		0267
2	42916	9.0000	1.2200	10.0000	1.2700		0268
2	42920	11.2000	1.2900	12.0000	1.1300		0269
2	42924	18.0000	1.1200	30.0000	1.0000		0270

START		COL							
		1	2	3	4	5	6	7	8
2	42975	14.0000	.5000	-30.0000	-1.0000			0271	
2	42979	-10.0000	-.6000	-8.5000	-.6600			0272	
2	42983	-7.0000	-.6500	-5.0000	-.4700			0273	
2	42987	6.0000	.9300	7.0000	1.0000			0274	
2	42991	8.0000	1.0400	9.0000	1.0600			0275	
2	42995	10.0000	1.0800	11.0000	1.0900			0276	
2	42999	12.0000	1.1100	16.0000	1.1100			0277	
2	43003	30.0000	1.0000	14.0000	1.5300			0278	
2	43050	18.0000	.6000	-30.0000	-1.0000			0279	
2	43054	-10.0000	-.6000	-7.0000	-.6000			0280	
2	43058	-6.0000	-.5800	-5.0000	-.5000			0281	
2	43062	-4.0000	-.3600	-3.0000	-.2400			0282	
2	43066	-2.0000	-.1200	-1.0000	-.0200			0283	
2	43070	.0000	.1400	3.0000	.6100			0284	
2	43074	4.0000	.7500	5.0000	.8400			0285	
2	43078	6.0000	.9000	7.0000	.9200			0286	
2	43082	14.0000	1.0400	15.0000	1.0700			0287	
2	43086	30.0000	1.0000	30.1000	1.0000			0288	
2	43125	15.0000	.7000	-30.0000	-1.0000			0289	
2	43129	-10.0000	-.6000	-7.0000	-.6000			0290	
2	43133	-5.8000	-.5900	-5.0000	-.5500			0291	
2	43137	-4.0000	-.4400	-3.0000	-.3100			0292	
2	43141	-2.0000	-.1700	2.0000	.5700			0293	
2	43145	3.0000	.7100	4.0000	.8100			0294	
2	43149	5.0000	.8500	9.4000	.9200			0295	
2	43153	15.0000	.9300	30.0000	1.0000			0296	
2	43200	15.0000	.7500	-30.0000	-1.0000			0297	
2	43204	-10.0000	-.7000	-6.5000	-.7000			0298	
2	43208	-5.7000	-.6900	-5.0000	-.6500			0299	
2	43212	-4.0000	-.5400	-3.0000	-.3800			0300	
2	43216	-2.0000	-.2000	1.4000	.5500			0301	
2	43220	2.0000	.6300	3.0000	.7000			0302	
2	43224	4.0000	.7400	7.0000	.8300			0303	
2	43228	15.0000	.9500	30.0000	1.0000			0304	
2	43275	14.0000	.8000	-30.0000	-.9500			0305	
2	43279	-14.0000	-.8000	-12.0000	-.7900			0306	
2	43283	-10.0000	-.8100	-6.0000	-.6900			0307	
2	43287	-2.0000	-.2500	.0000	.0700			0308	
2	43291	2.0000	.3500	4.0000	.5600			0309	
2	43295	6.0000	.7050	8.0000	.8050			0310	
2	43299	9.0000	.8400	15.0000	.8500			0311	
2	43303	30.0000	1.0000	30.0000	1.0000			0312	
2	43350	14.0000	.8500	-30.0000	-.9500			0313	
2	43354	-16.0000	-.8030	-13.0000	-.7720			0314	
2	43358	-10.0000	-.7400	-6.0000	-.6800			0315	
2	43362	-2.0000	-.2900	.0000	-.0450			0316	
2	43366	2.0000	.2300	4.0000	.4600			0317	
2	43370	6.0000	.6400	8.0000	.7600			0318	
2	43374	9.0000	.8020	15.0000	.8500			0319	
2	43378	30.0000	1.0000	30.0000	1.0000			0320	
2	43425	14.0000	.9000	-30.0000	-.9500			0321	
2	43429	-16.0000	-.7540	-13.0000	-.7120			0322	
2	43433	-10.0000	-.6700	-6.0000	-.6630			0323	
2	43437	-2.0000	-.3100	.0000	-.1500			0324	

START		COL. ---+---1---+---2---+---3---+---4---+---5---+---6---+---7---+---8							
2	COL.	1	2	3	4	5	6	7	8
2	43441	1.0000	.0000	2.0000	.1360				0325
2	43445	4.0000	.3900	6.0000	.6400				0326
2	43449	8.0000	.7650	10.0000	.8100				0327
2	43453	30.0000	1.0000	30.0000	1.0000				0328
2	43500	13.0000	.9500	-30.0000	-.9500				0329
2	43504	-16.0000	-.7410	-13.0000	-.6960				0330
2	43508	-10.0000	-.6510	-6.0000	-.6410				0331
2	43512	-2.0000	-.2700	.0000	-.0900				0332
2	43516	2.0000	.1800	4.0000	.4350				0333
2	43520	6.0000	.6800	8.0000	.7950				0334
2	43524	10.0000	.8100	30.0000	1.0000				0335
2	43575	13.0000	2.0000	-30.0000	-.9500				0336
2	43579	-16.0000	-.7260	-13.0000	-.6780				0337
2	43583	-10.0000	-.6300	-6.0000	-.6150				0338
2	43587	-2.0000	-.2400	.0000	-.0500				0339
2	43591	2.0000	.2000	4.0000	.4490				0340
2	43595	6.0000	.7000	8.0000	.8060				0341
2	43599	10.0000	.8500	30.0000	1.0000				0342
2	43650	33.0000	.0000	-100.0000	-.0130				0343
2	43654	-174.0000	.3590	-160.0000	.3000				0344
2	43658	-145.0000	.4810	-125.0000	.5570				0345
2	43662	-90.0000	.5550	-60.0000	.3950				0346
2	43666	-30.0000	.1437	-30.0000	.1437				0347
2	43670	-10.0000	.1065	-7.4000	.0989				0348
2	43674	-6.4000	.0052	-5.0000	.0032				0349
2	43678	4.0000	.0019	14.0000	.0135				0350
2	43682	15.2000	-.0932	19.0000	-.1303				0351
2	43686	30.0000	-.1437	30.1000	-.1437				0352
2	43690	34.9000	-.2220	35.0000	-.2220				0353
2	43694	45.0000	-.2950	60.0000	-.3950				0354
2	43698	80.0000	-.5000	95.0000	-.5550				0355
2	43702	110.0000	-.5600	125.0000	-.5570				0356
2	43706	135.0000	-.5380	145.0000	-.4810				0357
2	43710	150.0000	-.4380	160.0000	-.3000				0358
2	43714	174.0000	-.3590	180.0000	-.0130				0359
2	43725	33.0000	.3000	-180.0000	-.0130				0360
2	43729	-174.0000	.3590	-160.0000	.3000				0361
2	43733	-145.0000	.4810	-125.0000	.5570				0362
2	43737	-90.0000	.5550	-60.0000	.3950				0363
2	43741	-30.0000	.1437	-30.0000	.1437				0364
2	43745	-10.0000	.1065	-7.4000	.0989				0365
2	43749	-6.4000	.0052	-5.0000	.0032				0366
2	43753	4.0000	.0019	14.0000	.0135				0367
2	43757	15.2000	-.0932	19.0000	-.1303				0368
2	43761	30.0000	-.1437	30.1000	-.1437				0369
2	43765	34.9000	-.2220	35.0000	-.2220				0370
2	43769	45.0000	-.2950	60.0000	-.3950				0371
2	43773	80.0000	-.5000	95.0000	-.5550				0372
2	43777	110.0000	-.5600	125.0000	-.5570				0373
2	43781	135.0000	-.5380	145.0000	-.4810				0374
2	43785	150.0000	-.4380	160.0000	-.3000				0375
2	43789	174.0000	-.3590	180.0000	-.0130				0376
2	43800	10.0000	.4000	-30.0000	.1437				0377
2	43804	-10.0000	.1427	-7.0000	.1356				0378

START		COL						
		1	2	3	4	5	6	7
2	43808	-6.0000	.0038	-5.0000	.0019			0379
2	43812	8.0000	.0124	11.2000	.0115			0380
2	43816	12.2000	-.1299	18.0000	-.1341			0381
2	43820	30.0000	-.1437	-7.4000	.0939			0382
2	43875	9.0000	.5000	-30.0000	.1437			0383
2	43879	-10.0000	.1108	-9.0000	.0952			0384
2	43883	-7.0000	.0483	-5.0000	.0045			0385
2	43887	8.0000	.0031	12.0000	-.0800			0386
2	43891	16.0000	-.1293	30.0000	-.1437			0387
2	43950	11.0000	.6000	-30.0000	.1437			0388
2	43954	-25.0000	.1267	-20.0000	.1047			0389
2	43958	-15.0000	.0878	-10.0000	.0707			0390
2	43962	-3.0000	-.0004	5.0000	.0087			0391
2	43966	8.0000	-.0490	13.0000	-.1415			0392
2	43970	15.0000	-.1352	30.0000	-.1437			0393
2	44025	15.0000	.7000	-30.0000	.1437			0394
2	44029	-25.0000	.1416	-20.0000	.1397			0395
2	44033	-15.0000	.1327	-10.0000	.1306			0396
2	44037	-3.0000	-.0119	.0000	-.0025			0397
2	44041	1.0000	-.0064	2.0000	-.0073			0398
2	44045	3.0000	-.0241	4.0000	-.0569			0399
2	44049	6.0000	-.1105	8.0000	-.1347			0400
2	44053	15.0000	-.1470	30.0000	-.1437			0401
2	44100	18.0000	.7500	-30.0000	.1437			0402
2	44104	-25.0000	.1361	-20.0000	.1335			0403
2	44108	-15.0000	.1260	-10.0000	.1234			0404
2	44112	-8.0000	.1039	-6.0000	.0544			0405
2	44116	-4.0000	-.0291	-3.0000	-.0335			0406
2	44120	-2.0000	-.0245	.0000	-.0146			0407
2	44124	1.0000	-.0197	2.0000	-.0459			0408
2	44128	3.0000	-.0943	4.0000	-.1154			0409
2	44132	5.0000	-.1177	15.0000	-.1526			0410
2	44136	30.0000	-.1437	30.1000	-.1437			0411
2	44175	15.0000	.8000	-30.0000	.1500			0412
2	44179	-8.0000	.0750	-6.0000	.0600			0413
2	44183	-4.0000	.0350	-2.0000	-.0120			0414
2	44187	.0000	-.0200	.5000	-.0150			0415
2	44191	1.0000	-.0120	1.5000	-.0170			0416
2	44195	2.0000	-.0290	4.0000	-.0750			0417
2	44199	6.0000	-.1000	8.0000	-.1150			0418
2	44203	18.0000	-.1300	30.0000	-.1500			0419
2	44250	17.0000	.9000	-30.0000	.1400			0420
2	44254	-8.0000	.1200	-6.0000	.0970			0421
2	44258	-4.0000	.0430	-2.0000	-.0120			0422
2	44262	.0000	-.0200	.1000	-.0010			0423
2	44266	.2500	.0120	.5000	.0170			0424
2	44270	.7500	.0090	1.0000	-.0070			0425
2	44274	1.5000	-.0300	2.0000	-.0350			0426
2	44278	4.0000	-.0930	6.0000	-.1370			0427
2	44282	8.0000	-.1600	30.0000	-.1900			0428
2	44325	17.0000	1.0000	-30.0000	.1400			0429
2	44329	-8.0000	.1200	-6.0000	.0970			0430
2	44333	-4.0000	.0430	-2.0000	-.0120			0431
2	44337	.0000	-.0200	.1000	-.0010			0432

START									
COL		1	2	3	4	5	6	7	8
2	44341	.2500	.0120	.5000	.0170				0433
2	44345	.7500	.0090	1.0000	-.0070				0434
2	44349	1.5000	-.0300	2.0000	-.0350				0435
2	44353	4.0000	-.0830	6.0000	-.1370				0436
2	44357	8.0000	-.1600	30.0000	-.1900				0437
2	44400	17.0000	2.0000	-30.0000	.1400				0438
2	44404	-8.0000	.1200	-6.0000	.0970				0439
2	44408	-4.0000	.0430	-2.0000	-.0120				0440
2	44412	.0000	-.0200	.1000	-.0010				0441
2	44416	.2500	.0120	.5000	.0170				0442
2	44420	.7500	.0090	1.0000	-.0070				0443
2	44424	1.5000	-.0300	2.0000	-.0350				0444
2	44428	4.0000	-.0830	6.0000	-.1370				0445
2	44432	8.0000	-.1600	30.0000	-.1900				0446
2	1 1	.002378							0447
2	1 13	0.0							0448
2	1 13	6.4							0449
2	1 17	0.35							0450
2	1 20	2.0							0451
2	1 113	01000111.							0452
1	-1 110	0.0							0453
1	1	TITLE 1 - TEST MAIN ROTOR DATA -							0454

# APPENDIX I. E927 SAMPLE OUTPUT

## TITLE 1 - TEST MAIN ROTOR DATA -

238

HOVER

MAIN ROTOR

NOTE: THIS PAGE IS PRECEDED BY AN  
ECHO OF THE INPUT PRESENTED  
IN APPENDIX H.

PITCH ANGLE AT 75% RADIUS = 6.400 DEG  
CALCULATED THRUST = 16364.911 LB  
CALCULATED CONING ANGLE = 3.389 DEG  
CALCULATED LAG ANGLE = 5.180 DEG  
CALCULATED BLADE TORSIONAL FREQUENCY = 0.0 RAD/SEC  
CALCULATED BLADE BENDING FREQUENCIES : MODE 1 = 77.5 RAD/SEC  
MODE 2 = 126.7 RAD/SEC

RADIUS (IN)	STEADY DEFLECTIONS (IN)		ANGLE OF ATTACK (DEG)
	FLATWISE	EDGEWISE	
0.0	0.0	0.0	-74.100
15.000	0.0	0.0	-33.210
23.750	-0.004	0.011	-20.206
41.250	-0.009	0.104	-6.880
62.500	0.041	0.285	-0.199
83.400	0.156	0.505	2.542
100.200	0.256	0.699	3.650
117.000	0.356	0.904	4.219
133.800	0.455	1.119	4.447
150.600	0.546	1.343	4.446
167.745	0.626	1.582	4.277
185.235	0.688	1.835	3.980
202.725	0.723	2.098	3.588
220.215	0.728	2.371	3.124
236.910	0.696	2.641	2.627
252.810	0.631	2.907	2.116
268.710	0.542	3.181	1.574
283.145	0.456	3.437	0.647
296.115	0.397	3.670	-0.156
306.450	0.368	3.857	-0.345
314.150	0.353	3.997	1.274
320.000	0.344	4.103	2.101

[illegible]

	R	CHORD	STRUCTURAL TWIST	AERODYNAMIC TWIST	AC	CG	TORSIONAL MODE SHAPE	EA
240	0.0	0.0	-9.50000	-9.50000	0.0	0.0	0.0	0.0
	15.00000	0.0	-9.50000	-9.50000	0.0	0.0	0.0	0.0
	23.75000	8.30000	-9.50000	-9.50000	0.0	0.0	0.0	-2.07500
	41.25000	8.30000	-9.50000	-9.50000	0.0	0.0	0.0	-2.07500
	62.50000	20.76000	-8.89205	-8.89205	-0.35000	-0.21759	0.0	-5.19000
	83.40000	20.76000	-7.87555	-7.87555	-0.35000	-0.82200	0.0	-5.19000
	100.20000	20.76000	-7.05845	-7.05845	-0.35000	-0.82200	0.0	-5.19000
	117.00000	20.76000	-6.24136	-6.24136	-0.35000	-0.82200	0.0	-5.19000
	133.80000	20.76000	-5.42427	-5.42427	-0.35000	-0.82200	0.0	-5.19000
	150.60000	20.76000	-4.60718	-4.60718	-0.35000	-0.82200	0.0	-5.19000
	167.74500	20.76000	-3.77331	-3.77331	-0.35000	-0.66700	0.0	-5.19000
	185.23500	20.76000	-2.92266	-2.92266	-0.35000	-0.66700	0.0	-5.19000
	202.72500	20.76000	-2.07201	-2.07201	-0.35000	-0.46850	0.0	-5.19000
	220.21500	20.76000	-1.22136	-1.22136	-0.35000	-0.69851	0.0	-5.19000
	236.91000	22.31700	-0.40938	-0.40938	0.0	0.29349	0.0	-5.58000
	252.81000	22.31700	0.36394	0.36394	0.0	0.30385	0.0	-5.58000
	268.71000	22.31700	1.13726	1.13726	0.0	0.30962	0.0	-5.58000
	283.14500	20.76000	2.25160	2.25160	-0.35000	0.36800	0.0	-5.19000
	296.11500	20.76000	3.20767	3.20767	-0.35000	2.09900	0.0	-5.19000
	306.45000	20.76000	3.51000	3.51000	-1.75128	0.38606	0.0	-5.19000
	314.15000	20.76000	1.97000	1.97000	-4.55384	-3.18159	0.0	-5.19000
	320.00000	20.76000	1.20000	1.20000	-6.68306	-5.72800	0.0	-5.19000

	R	QEO	QFO	QEOP	QFOP
240	0.0	0.0	0.0	0.0	0.0
	15.00000	0.0	0.0	0.0	0.0
	23.75000	0.01108	0.00402	0.00155	-0.00151
	41.25000	0.10392	-0.00914	0.00659	-0.00127
	62.50000	0.28471	0.04123	0.00918	0.00136
	83.40000	0.50523	0.15567	0.01101	0.00444
	100.20000	0.69939	0.25565	0.01170	0.00453
	117.00000	0.90412	0.35611	0.01231	0.00450
	133.80000	1.11881	0.45498	0.01290	0.00420
	150.60000	1.34309	0.54645	0.01347	0.00351
	167.74500	1.58162	0.62605	0.01404	0.00256
	185.23500	1.83470	0.68764	0.01460	0.00133
	202.72500	2.09751	0.72338	0.01516	-0.00032
	220.21500	2.37055	0.72784	0.01577	-0.00215
	236.91000	2.64091	0.69591	0.01635	-0.00418
	252.81000	2.90709	0.63050	0.01689	-0.00600
	268.71000	3.18148	0.54180	0.01741	-0.00672
	283.14500	3.43658	0.45641	0.01779	-0.00611
	296.11500	3.66970	0.39675	0.01806	-0.00370
	306.45000	3.85694	0.36796	0.01815	-0.00217
	314.15000	3.99675	0.35345	0.01816	-0.00171
	320.00000	4.10300	0.34363	0.01816	-0.00167

IBM Z30687



R	D(DT)/DUT	D(DT)/DUP	D(DT)/DOT	D(DH)/DUT	D(DH)/DUP	D(DH)/DOT
0.0	0.0	0.0	0.0	0.0	0.0	0.0
15.00000	0.0	0.0	0.0	0.0	0.0	0.0
23.75000	-0.00040	-0.00073	0.33155	-0.00001	-0.00021	-0.16268
41.25000	0.00140	-0.00516	6.52470	0.00034	-0.00130	1.18437
62.50000	0.00414	-0.01307	23.85057	0.00109	-0.00327	6.46567
83.40000	0.00610	-0.01753	41.71577	0.00107	-0.00244	8.75691
100.20000	0.00745	-0.02118	59.83550	0.00103	-0.00180	10.47511
117.00000	0.00859	-0.02483	81.23457	0.00100	-0.00133	12.44987
133.80000	0.00954	-0.02851	105.97988	0.00096	-0.00090	14.26927
150.60000	0.01102	-0.03221	134.44925	0.00100	-0.00056	16.16053
167.74500	0.01195	-0.03662	169.58604	0.00098	-0.00031	18.40511
185.23500	0.01269	-0.04126	210.32202	0.00095	-0.00015	20.76438
202.72500	0.01218	-0.04602	255.52919	0.00083	-0.00014	23.23199
220.21500	0.01210	-0.05052	304.00663	0.00078	-0.00027	25.63134
236.91000	0.01266	-0.05901	381.23440	0.00078	-0.00053	29.98955
252.81000	0.01374	-0.06489	447.37186	0.00099	-0.00125	35.26863
268.71000	0.01276	-0.07412	541.85065	0.00084	-0.00173	38.29369
283.14500	0.00878	-0.07731	593.92714	0.00055	-0.00250	36.33645
296.11500	0.00549	-0.08701	697.52874	0.00039	-0.00370	38.61169
306.45000	0.01024	-0.09279	771.89581	0.00079	-0.00407	41.73612
314.15000	0.01896	-0.09562	817.74876	0.00168	-0.00494	74.68638
320.00000	0.02305	-0.08673	756.49209	0.00288	-0.00730	110.98781

R	D(DM)/DUT	D(DM)/DUP	D(DM)/DOT	DT	DH	DM
0.0	0.0	0.0	0.0	0.0	0.0	0.0
15.00000	0.0	0.0	0.0	0.0	0.0	0.0
23.75000	0.00044	0.00073	-0.26554	-0.29732	-0.05191	0.31267
41.25000	-0.00948	0.02382	-30.98563	-0.42541	-0.11705	0.28950
62.50000	0.00011	0.00040	-0.62797	0.43651	0.15563	0.19019
83.40000	0.00014	0.00051	-1.08320	2.76489	0.63633	0.27625
100.20000	0.00017	0.00060	-1.54369	5.12602	0.97658	0.36383
117.00000	0.00111	-0.00514	16.77181	7.77250	1.27528	0.54370
133.80000	0.00120	-0.00588	21.82340	10.56367	1.53142	0.79426
150.60000	0.00351	-0.00625	27.06373	13.41433	1.74900	1.17383
167.74500	0.00455	-0.00613	29.93084	16.53455	1.95691	2.61935
185.23500	0.00574	-0.00540	29.70216	19.55134	2.12254	4.59828
202.72500	-0.00021	-0.00558	30.45412	22.08643	2.22559	6.18703
220.21500	-0.00107	-0.00339	19.66104	23.68544	2.24479	5.50461
236.91000	-0.00210	-0.00102	5.55483	26.25026	2.37083	5.39755
252.81000	0.00324	-0.00014	2.46406	26.27911	2.30451	5.25127
268.71000	0.00322	-0.00493	37.29655	25.32963	2.20955	6.39222
283.14500	0.00180	-0.00851	65.92044	16.95756	1.59790	5.49944
296.11500	0.00052	-0.01268	101.65111	8.78590	1.13260	4.52887
306.45000	-0.00627	-0.01825	148.14500	7.69474	1.13389	2.42466
314.15000	-0.01425	-0.00596	43.94727	31.97936	2.69876	1.07474
320.00000	-0.02523	0.08714	-765.20454	46.48986	4.15806	-2.40927

IRM 730687

	R	CL	CD	CH	D(CL)/DA	D(CD)/DA	D(CH)/DA	D(CL)/DM	D(CD)/DM	D(CH)/DM
242	0.0	-0.42808	1.88000	0.47020	-0.74305	0.0	-0.30558	0.0	0.0	0.0
	15.00000	-0.95837	0.74466	0.17059	-0.74305	-2.04628	-0.47995	0.0	0.0	0.0
	23.75000	-0.90206	0.44392	0.12548	0.57296	-1.08862	-0.10657	0.0	0.0	0.0
	41.25000	-0.62922	0.08167	0.05016	9.31056	-2.06265	-5.36861	0.0	0.0	0.0
	62.50000	0.12646	0.00913	0.00251	6.76090	-0.03820	-0.00828	0.0	0.0	0.0
	83.40000	0.44991	0.00964	0.00211	6.76090	0.01432	-0.00828	0.0	0.0	0.0
	100.20000	0.58070	0.00991	0.00195	6.76090	0.01432	-0.00828	0.0	0.0	0.0
	117.00000	0.64789	0.01013	0.00215	6.76090	0.03438	0.06646	0.0	0.0	0.0
	133.80000	0.67479	0.01027	0.00242	6.76090	0.03438	0.06646	0.0	0.0	0.0
	150.60000	0.67739	0.01025	0.00283	6.78151	0.03460	0.06529	0.48248	-0.00304	0.07112
	167.74500	0.67371	0.01004	0.00511	6.90300	0.03591	0.05834	0.47210	-0.00315	0.07172
	185.23500	0.65383	0.00974	0.00736	7.02707	0.03627	0.04757	0.45377	-0.00342	0.07250
	202.72500	0.61704	0.00937	0.00829	7.13287	0.03870	0.04078	0.06675	-0.00201	-0.05261
	220.21500	0.56106	0.00897	0.00625	7.19546	0.04038	0.02234	0.05232	-0.00240	-0.04836
	236.91000	0.49999	0.00854	0.00459	7.25523	0.04000	0.00472	0.03691	-0.00343	-0.04382
	252.81000	0.43973	0.00838	0.00392	7.48130	0.07675	0.00184	0.35840	0.02610	0.01686
	268.71000	0.37532	0.00850	0.00423	8.02034	0.04954	0.02468	0.19908	0.01148	0.01011
	283.14500	0.24346	0.00800	0.00379	8.50984	0.0	0.04541	-0.07334	0.0	-0.00143
	296.11500	0.11559	0.00808	0.00285	9.13770	-0.02865	0.06405	-0.31458	0.0	-0.01143
	306.45000	0.09463	0.00852	0.00143	9.44286	-0.02314	0.08717	0.51367	0.01827	-0.06202
	314.15000	0.37295	0.01086	0.00060	9.54040	0.34354	0.02461	0.96091	0.06649	-0.11108
	320.00000	0.52272	0.01837	-0.00130	8.53200	0.78367	-0.41304	1.14977	0.16673	-0.14406

	R	O	O	U	U	U	O	ALPHA	MACH
		STRUCTURAL	AERODYNAMIC	P	T				NUMBER
11	0.0	15.90000	15.90000	468.02342	0.0	468.02342	90.00000	-74.10000	0.03495
	15.00000	15.90000	15.90000	468.02342	405.26640	619.10159	49.11037	-33.21037	0.04623
	23.75000	15.90000	15.90000	468.02342	641.67180	794.22202	36.10631	-20.20631	0.05931
	41.25000	15.90000	15.90000	468.02342	1114.48260	1208.76689	22.77982	-6.87982	0.09026
	62.50000	15.29205	15.29205	468.02342	1688.61000	1752.26986	15.49151	-0.19946	0.13084
	83.40000	14.27555	14.27555	468.02342	2253.28118	2301.37394	11.73392	2.54163	0.17185
	100.20000	13.45845	13.45845	468.02342	2707.17955	2747.33817	9.80847	3.64998	0.20515
	117.00000	12.64136	12.64136	468.02342	3161.07792	3195.53744	8.42192	4.21944	0.23862
	133.80000	11.82427	11.82427	468.02342	3614.97629	3645.14739	7.37693	4.44734	0.27219
	150.60000	11.00718	11.00718	468.02342	4068.87466	4095.70347	6.56163	4.44556	0.30583
	167.74500	10.17331	10.17331	468.02342	4532.09415	4556.19615	5.89596	4.27735	0.34022
	185.23500	9.32266	9.32266	468.02342	5004.63477	5026.47144	5.34265	3.98001	0.37533
	202.72500	8.47201	8.47201	468.02342	5477.17540	5497.13528	4.88405	3.58796	0.41048
	220.21500	7.62136	7.62136	468.02342	5949.71602	5968.09573	4.49780	3.12356	0.44565
	236.91000	6.80938	6.80938	468.02342	6400.77752	6417.86560	4.18201	2.62737	0.47923
	252.81000	6.03606	6.03606	468.02342	6830.35991	6846.37586	3.91984	2.11622	0.51123
	268.71000	5.26274	5.26274	468.02342	7259.94229	7275.01258	3.68956	1.57418	0.54324
	283.14500	4.14840	4.14840	468.02342	7649.94366	7664.24712	3.50099	0.64741	0.57230
	296.11500	3.19233	3.19233	468.02342	8000.36400	8014.04206	3.34800	-0.15567	0.59842
	306.45000	2.89000	2.89000	468.02342	8279.59255	8292.81006	3.23534	-0.34534	0.61924
	314.15000	4.43000	4.43000	468.02342	8487.62930	8500.52334	3.15620	1.27380	0.63475
	320.00000	5.20000	5.20000	468.02342	8645.68320	8658.34187	3.09861	2.10139	0.64653

IBM Z30687

R	PHE(1,I)	PHF(1,I)	PHE(2,I)	PHF(2,I)	PHE(3,I)	PHF(3,I)	PHE(4,I)	PHF(4,I)
0.0	0.0	0.0	0.0	0.0				
15.00000	0.00000	0.00000	-0.00000	-0.00000				
23.75000	0.01443	-0.06550	-0.11533	0.06907				
41.25000	0.04265	-0.19433	-0.31780	0.20035				
62.50000	0.07436	-0.34180	-0.51612	0.32001				
83.40000	0.09919	-0.46391	-0.64142	0.33810				
100.20000	0.11385	-0.54193	-0.69542	0.28228				
117.00000	0.12353	-0.59983	-0.71296	0.17523				
133.80000	0.12788	-0.63489	-0.69571	0.02932				
150.60000	0.12652	-0.64399	-0.64607	-0.13980				
167.74500	0.11894	-0.62318	-0.56599	-0.31638				
185.23500	0.10502	-0.56974	-0.45975	-0.47719				
202.72500	0.08497	-0.48154	-0.33437	-0.59265				
220.21500	0.05895	-0.35641	-0.19443	-0.63567				
236.91000	0.02880	-0.20108	-0.05014	-0.58755				
252.81000	-0.00419	-0.02128	0.09481	-0.44739				
268.71000	-0.04047	0.18585	0.24475	-0.21509				
283.14500	-0.07552	0.39359	0.38317	0.06636				
296.11500	-0.10802	0.59156	0.50845	0.36215				
306.45000	-0.13423	0.75377	0.60848	0.61391				
314.15000	-0.15381	0.87562	0.68303	0.80485				
320.00000	-0.16870	0.96831	0.73966	0.95027				

R	PHEP(1,I)	PHFP(1,I)	PHEP(2,I)	PHFP(2,I)	PHEP(3,I)	PHFP(3,I)	PHEP(4,I)	PHFP(4,I)
0.0	0.0	0.0	0.0	0.0				
15.00000	0.00165	-0.00750	-0.01336	0.00793				
23.75000	0.00164	-0.00746	-0.01283	0.00781				
41.25000	0.00158	-0.00724	-0.01060	0.00697				
62.50000	0.00133	-0.00637	-0.00765	0.00298				
83.40000	0.00100	-0.00512	-0.00430	-0.00192				
100.20000	0.00070	-0.00396	-0.00201	-0.00538				
117.00000	0.00039	-0.00265	0.00012	-0.00816				
133.80000	0.00006	-0.00117	0.00213	-0.01009				
150.60000	-0.00030	0.00052	0.00396	-0.01093				
167.74500	-0.00066	0.00235	0.00551	-0.01046				
185.23500	-0.00101	0.00429	0.00674	-0.00855				
202.72500	-0.00136	0.00637	0.00767	-0.00508				
220.21500	-0.00169	0.00854	0.00839	-0.00009				
236.91000	-0.00198	0.01062	0.00892	0.00580				
252.81000	-0.00221	0.01246	0.00930	0.01181				
268.71000	-0.00239	0.01401	0.00953	0.01743				
283.14500	-0.00249	0.01507	0.00963	0.02156				
296.11500	-0.00253	0.01563	0.00967	0.02392				
306.45000	-0.00254	0.01581	0.00968	0.02471				
314.15000	-0.00255	0.01584	0.00958	0.02485				
320.00000	-0.00255	0.01585	0.00968	0.02486				

IRM 730687

244	BLADE EDGEWISE		BLADE FLATWISE		BLADE TORSIONAL	
	M. OF I. ABOUT C.G. LB.IN.SEC-SQ/IN.	DELTA R IN.	M. OF I. ABOUT C.G. LB.IN.SEC-SQ/IN.	DELTA R IN.	M. OF I. ABOUT C.G. LB.IN.SEC-SQ/IN.	DELTA R IN.
	0.0	15.000			0.0	15.000
	0.00269	8.300			0.00269	8.300
	0.00479	2.800			0.00479	2.800
	0.00823	3.900			0.00823	3.900
	0.01842	15.830			0.01842	15.830
	0.02398	29.170			0.02398	29.170
	0.03180	84.000			0.03180	84.000
	0.03474	61.000			0.03474	61.000
	0.03971	8.960			0.03971	8.960
	0.04650	11.040			0.04650	11.040
	0.04354	36.660			0.04354	36.660
	0.03381	12.340			0.03381	12.340
	0.06848	2.000			0.06848	2.000
	0.05861	8.000			0.05861	8.000
	0.05723	9.500			0.05723	9.500
	0.03805	13.500			0.03805	13.500

BLADE MASS LB.SEC-SQ/IN.-SQ	DELTA R IN.	BLADE EDGEWISE SECOND MOMENT OF AREA-IN.4TH	DELTA R IN.	BLADE FLATWISE SECOND MOMENT OF AREA-IN.4TH	DELTA R IN.
0.0	15.00000	0.88587E+02	17.50000	0.87885E+02	17.50000
0.00744	17.50000	0.37941E+03	17.50000	0.93696E+02	17.50000
0.00423	17.50000	0.46903E+03	25.00000	0.27593E+02	25.00000
0.00168	25.00000	0.71842E+03	16.80000	0.23430E+02	16.80000
0.00144	16.80000	0.85000E+03	16.80000	0.23430E+02	16.80000
0.00138	16.80000	0.85000E+03	16.80000	0.23430E+02	16.80000
0.00137	16.80000	0.85000E+03	16.80000	0.23430E+02	16.80000
0.00137	16.80000	0.85000E+03	16.80000	0.23430E+02	16.80000
0.00137	16.80000	0.90000E+03	17.49000	0.27065E+02	17.49000
0.00145	17.49000	0.90000E+03	17.49000	0.27430E+02	17.49000
0.00146	17.49000	0.84979E+03	17.49000	0.27272E+02	17.49000
0.00150	17.49000	0.73953E+03	17.49000	0.27190E+02	17.49000
0.00162	17.49000	0.64334E+03	15.90000	0.27116E+02	15.90000
0.00190	15.90000	0.59000E+03	15.90000	0.26950E+02	15.90000
0.00190	15.90000	0.56444E+03	15.90000	0.25433E+02	15.90000
0.00186	15.90000	0.53000E+03	12.97000	0.22950E+02	12.97000
0.00176	12.97000	0.53000E+03	12.97000	0.22950E+02	12.97000
0.00343	12.97000	0.53000E+03	7.70000	0.22950E+02	7.70000
0.00293	7.70000	0.53000E+03	7.70000	0.22950E+02	7.70000
0.00139	7.70000	0.53000E+03	4.00000	0.22950E+02	4.00000
0.00036	4.00000				

#### BLADE RIGID BODY PROPERTIES

FLAPPING MASS = .660383 LB SEC-SQ/IN  
 1ST MOM ABOUT HINGE = 86.1467 LB SEC-SQ  
 FLAPPING INERTIA = 18190.6 LB IN SEC-SQ  
 LAG FREQUENCY = .266517 CYCLES/REV

#### BLADE MODAL PROPERTIES

#### BENDING MODE GENERALIZED MASSES

MODE(1) = .125382 LB SEC-SQ/IN  
 MODE(2) = .209446 LB SEC-SQ/IN

## BENDING MODE (M)(PHE)

## BENDING MODE (M)(PHF)

246

MODE(1) = .193489D-01 LB SEC-SQ/IN

MODE(1) = -.942375D-01 LB SEC-SQ/IN

MODE(2) = -.115519 LB SEC-SQ/IN

MODE(2) = .385765D-02 LB SEC-SQ/IN

## BENDING MODE (M)(PHE)(R)

## BENDING MODE (M)(PHF)(R)

MODE(1) = -.805651D-01 LB SEC-SQ

MODE(1) = .621710 LB SEC-SQ

MODE(2) = .683082 LB SEC-SQ

MODE(2) = -3.94313 LB SEC-SQ

17 DEGREES OF FREEDOM ARE USED IN THIS RUN

1 2 7 8 9 10 11 12 21 22 23 24 25 26 27 28 29

# CASE DEFINITION

AIR DENSITY LB./SEC.-SQ/IN.4TH	SPEED OF SOUND FT./SEC.	TIP LOSS FACTOR	AXIAL VEL. KNOTS	ROTOR SPEED R.P.M.	BLADE RADIUS FEET
0.11468D-06	1116.00000	0.99000	0.0	258.00000	26.83333
OFFSET FEET	NUMBER OF BLADES	ROOT FLAP SPRING LB.IN./RAD.	ROOT LAG SPRING LB.IN./RAD.	PRELAG ANGLE RADIAN	PRECONE ANGLE RADIAN
1.25000	4	0.0	0.0	0.0	0.0
BLADE YOUNG'S MOD. LB/IN.-SQ	RADIUS OF PUSH ROD INCHES	LAG DAMPING FRACT CRITICAL	RIGID PITCH DAMP. FRACT CRITICAL	REF. Rotor SPEED R.P.M.	BLADE BENDING MODES
0.10000D+07	15.12650	0.35000	0.0	258.00000	2
FIXED SYSTEM MODES	PITCH-LAG COUPLING DEG/DEG	WEIGHT AT PUSHROD, LB	PITCH BEAM STIFFNESS ACTUATOR MOM. LB/IN.	STIFFNESS LB-IN./RAD.	PITCH BEAM RADIUS INCHES
5	0.0	0.0	0.50000D+05	0.0	0.0
PITCH HORN LENGTH INCHES	FORWARD FLIGHT SPEED KNOTS	ELASTIC PITCH DAMP. FRACT. CRITICAL	LAG DAMPER COEFFICIENT LB-SEC/IN.	LAG DAMPER STIFFNESS LB/IN.	FLEXBEAM ROOT (XBR) INCHES
7.25000	0.0	0.0	676.00000	0.0	0.0

## CONTROL SWITCHES

ROTEST	FTEST	SYSDEF	ROTDEF	ARTIC	PHASE
1.	1.	01000111.	1.	11.	0.
VECT	TRMASC	SUMASC	TSERVC	MRMASC	MSERVC
0.	1.	111.	1.	1.	111.
CIR	CIRN	LAGKII			
1.	1.	1.			

MODE NO.	PHIXPH	PHIZPH	PHELD	PHEPLD	PHFLD	PHFPLD
248 1	1.0000	-0.0009	0.0	0.0	0.0	0.0
2 2	-1.0000	0.0010	0.0	0.0	0.0	0.0

QEOLD	QEOPLD	QFOLD	QFOPLD	PHLD	THTLD	PHOS
0.0	0.0	0.0	0.0	0.0	0.0	0.0



# FINAL STIFFNESS MATRIX

	17	17	1							
1	714.170	-74.3204	-1252.21	760.385	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	-1.41149	3330.19	-2304.16	-1473.63	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	-1339.02	-1795.95	.118472D+08	.108102D+07	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	319.047	-1228.43	240574.	909996.	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	623.028	-93.0826	-74.1366	-43.8058	-1711.06	-7579.55
	830.526	-991.072	.0	.0	.0	101.473	534.101			
6	.0	.0	.0	.0	93.0826	623.028	43.8058	-74.1366	7579.55	-1711.06
	991.072	830.526	.0	.0	.0	534.101	-101.473			
7	.0	.0	.0	.0	-1.22765	-37.8535	3177.22	-65.1601	568.906	3285.78
	-2026.78	-1315.67	.0	.0	.0	28.3808	434.059			
8	.0	.0	.0	.0	37.8535	-1.22765	65.1601	3177.22	-3285.78	568.906
	1315.67	-2026.78	.0	.0	.0	434.059	-28.3808			
9	.0	.0	.0	.0	-1797.87	-7252.59	1077.11	1922.39	-.140193D+07	-.162945D+08
	.108281D+07	.135041D+07	.0	.0	.0	-187109.	-480170.			
10	.0	.0	.0	.0	7252.59	-1797.87	-1922.39	1077.11	.162945D+08	-.140193D+07
	-.135041D+07	-.108281D+07	.0	.0	.0	-480170.	187109.			
11	.0	.0	.0	.0	389.188	859.306	-1781.58	391.228	242365.	.217900D+07
	-.123781D+08	-.272896D+07	.0	.0	.0	-.161585D+07	208639.			

12	.0	.0	.0	.0	-859.306	389.188	-391.228	-1781.58	-.217900D+07	242365.
	.272896D+07	-.123781D+08	.0	.0	.0	208639.	.161585D+07			
250 13	.0	.0	.0	.0	1.71156	33.0894	-5.12357	8.49605	-4083.65	1732.55
	753.296	756.359	.0	.0	.0	125.043	-16335.3			
14	.0	.0	.0	.0	33.0894	-1.71156	8.49605	5.12357	1732.55	4083.65
	756.359	-753.296	.0	.0	.0	16335.3	125.043			
15	-112.328	-112.808	-10129.7	3811.79	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	.0	.0	.0			
16	.0	.0	.0	.0	-32606.9	-7143.69	-35682.5	3102.89	-.415679D+07	-.174311D+08
	.118284D+07	.235881D+07	.0	.0	.0	-153513.	-130248.			
17	.0	.0	.0	.0	-7143.69	32606.9	3102.89	35682.5	-.174311D+08	.415679D+07
	.235881D+07	-.118284D+07	.0	.0	.0	515291.	-153513.			

# FINAL DAMPING MATRIX

	17	17	2							
1	3.44524	1.62137	280.539	36.6822	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	-2.05853	.0	.0			
2	1.40106	2.41175	-121.616	48.6965	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	-3.50275	.0	.0			
3	268.438	-71.1529	603103.	-49982.4	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	10337.5	.0	.0			
4	-31.8052	-14.4804	-80650.8	101006.	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	-339.039	.0	.0			
5	.0	.0	.0	.0	3.44524	-6.74680	1.62137	.136094D-01	280.539	-33.9665
	36.6822	5.19222	-1.63738	.212816	.0	547.568	-139.377			
6	.0	.0	.0	.0	6.74680	3.44524	-.136094D-01	1.62137	33.9665	280.539
	-5.19222	36.6822	.212816	1.63738	.0	-139.377	-547.568			
7	.0	.0	.0	.0	1.40106	.136094D-01	2.41175	-11.3237	-121.616	212.679
	48.6965	-40.9471	-.423867	.154362	.0	-308.591	-384.608			
8	.0	.0	.0	.0	-.136094D-01	1.40106	11.3237	2.41175	-212.679	-121.616
	40.9471	48.6965	.154362	.423867	.0	-384.608	308.591			
9	.0	.0	.0	.0	268.438	-33.9665	-71.1529	212.679	603103.	-980771.
	-49982.4	132.618	1588.63	-399.786	.0	.148565D+07	.193681D+07			
10	.0	.0	.0	.0	33.9665	268.438	-212.679	-71.1529	980771.	603103.
	-132.618	-49982.4	-399.786	-1588.63	.0	.193681D+07	-.148565D+07			
11	.0	.0	.0	.0	-31.8052	5.19222	-14.4804	-40.9471	-80650.8	132.618
	101006.	-983657.	-88.5144	19.0341	.0	-43258.5	17771.1			

252

12	.0	.0	.0	.0	-5.19222	-31.8052	40.9471	-14.4804	-132.618	-80650.8
	983657.	101006.	19.0341	88.5144	.0	17771.1	43258.5			

13	.0	.0	.0	.0	.221337D-01	.547969D-01	.195906	.147067D-01	84.7249	-154.845
	-44.5914	33.9177	.531518	.267172	.0	183.720	310.191			

14	.0	.0	.0	.0	.547969D-01	-.221337D-01	.147067D-01	-.195906	-154.845	-84.7249
	33.9177	44.5914	-.267172	.531518	.0	-310.191	183.720			

15	-.619499	-.386813	2584.08	-518.957	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	49.4180	.0	.0			

16	.0	.0	.0	.0	261.645	8.16080	-73.6610	211.864	540907.	-.111417D+07
	-117905.	10154.6	1100.99	-328.002	.0	.136682D+07	.229132D+07			

17	.0	.0	.0	.0	8.16080	-261.645	211.864	73.6610	-.111417D+07	-540907.
	10154.6	117905.	328.002	1100.99	.0	-.229132D+07	.136682D+07			

FINAL MASS MATRIX

17 17 3

1  
 .124859 -.251860D-03 .628595 -.960889D-01 .0 .0 .0 .0 .0  
 .0 .0 .0 .0 -.376950 .0 .0 .0 .0

2  
 -.251860D-03 .209560 -3.93592 .757781 .0 .0 .0 .0 .0  
 .0 .0 .0 .0 .154306D-01 .0 .0 .0 .0

3  
 .628595 -3.93592 18150.5 -2.45428 .0 .0 .0 .0 .0  
 .0 .0 .0 .0 344.587 .0 .0 .0 .0

4  
 -.960889D-01 .757781 -2.45428 18203.9 .0 .0 .0 .0 .0  
 .0 .0 .0 .0 .0 .0 .0 .0 .0

5  
 .0 .0 .0 .0 .124859 .0 -.251860D-03 .0 .628595 .0  
 -.960889D-01 .0 -.389862D-01 .800491D-02 .0 -1.60412 -.362875D-01 .0 .0 .0

6  
 .0 .0 .0 .0 .0 .124859 .0 -.251860D-03 .0 .628595  
 .0 -.960889D-01 .800491D-02 .389862D-01 .0 -.362875D-01 1.60412 .0 .0

7  
 .0 .0 .0 .0 -.251860D-03 .0 .209560 .0 -3.93592 .0  
 .757781 .0 .232338 -.910438D-02 .0 -7.77846 .726197 .0 .0 .0

8  
 .0 .0 .0 .0 .0 -.251860D-03 .0 .209560 .0 -3.93592  
 .0 .757781 -.910438D-02 -.232338 .0 .726197 7.77846 .0 .0 .0

9  
 .0 .0 .0 .0 .628595 .0 -3.93592 .0 18150.5 .0  
 -2.45428 .0 .0 -10.5538 .0 38922.2 -3736.74 .0 .0 .0

10  
 .0 .0 .0 .0 .0 .628595 .0 -3.93592 .0 18150.5  
 .0 -2.45428 -10.5538 .0 .0 -3736.74 -38922.2 .0 .0 .0

11  
 .0 .0 .0 .0 -.960889D-01 .0 .757781 .0 -2.45428 .0  
 18203.9 .0 -172.099 17.7265 .0 -6.14894 -2230.99 .0 .0 .0

254

12	.0	.0	.0	.0	.0	-.960889D-01	.0	.757781	.0	-2.45428
	.0	18203.9	17.7265	172.099	.0	-2230.99	6.14894			

13	.0	.0	.0	.0	-.194931D-01	.400246D-02	.116169	-.455219D-02	.0	-5.27690
	-86.0494	8.86324	2.64153	.0	.0	.0	21.1076			

14	.0	.0	.0	.0	.400246D-02	.194931D-01	-.455219D-02	-.116169	-5.27690	.0
	8.86324	86.0494	.0	2.64153	.0	-21.1076	.0			

15	-.942375D-01	.385765D-02	86.1467	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	2.64153	.0	.0			

16	.0	.0	.0	.0	-.802058	-.181437D-01	-3.88923	.363098	19461.1	-1868.37
	-3.07447	-1115.49	.0	-21.1076	.0	42429.5	.0			

17	.0	.0	.0	.0	-.181437D-01	.802058	.363098	3.88923	-1868.37	-19461.1
	-1115.49	3.07447	21.1076	.0	.0	.0	42429.5			

17	1	1	1	0	0	0	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1
714.170	-1.41149	-1339.02	319.047	.																	
.0	.0	.0	.0	.																	
.0	.0	.0	.0	.																-1	
.0	.0	-74.3204	3330.19	-1																	
-1228.43	.0	.0	.0	.																	
.0	.0	.0	.0	.																	
.0	-112.808	.0	.0	-1																	
-2304.16	..118472D+08	240574.	.0	.																	
.0	.0	.0	.0	.																	
.0	.0	.0	-10129.7	.																	
.0	760.385	-1473.63	.108102D+07	9																	
.0	.0	.0	.0	.																	
.0	.0	.0	.0	.																	
3811.79	.0	.0	.0	.																	
.0	.0	623.028	93.0826	-1																	
37.8535	-1797.87	7252.59	389.188	-8																	
1.71156	33.0894	.0	-32606.9	-7																	
.0	.0	.0	.0	-9																	
623.028	-37.8535	-1.22765	-7252.59	-1																	
859.306	389.188	33.0894	-1.71156	.																	
-7143.69	32606.9	.0	.0	.																	
.0	-74.1366	43.8058	3177.22	6																	
1077.11	-1922.39	-1781.58	-391.228	-5																	
8.49605	.0	-35682.5	3102.89	.																	
.0	.0	.0	-43.8058	-7																	
-65.1601	3177.22	1922.39	1077.11	3																	
-1781.58	8.49605	5.12357	.0	3																	
35682.5	.0	.0	.0	.																	
-1711.06	7579.55	568.906	-3285.78	-.																	
.162945D+08	242365.	-.217900D+07	-4083.65	1																	
.0	-.415679D+07	-.174311D+08	.0	.																	
.0	.0	-7579.55	-1711.06	3																	
568.906	-.162945D+08	-.140193D+07	.217900D+07	2																	
1732.55	4083.65	.0	-.174311D+08	.																	
.0	.0	.0	.0	8																	
991.072	-2026.78	1315.67	.108281D																		

{ TOTAL NO. OF DEGREES-OF-FREEDOM (17)  
{ AND D.O.F. USED IN THIS RUN (1=YES, 0=NO)

NOTE: DATA WRITTEN TO UNIT 10  
FOR SIMVIB PROGRAM.

STIFFNESS MATRIX (17x17)

256

.0	.0	.0	.0	.0
.0	.0	.0	.0	-.619499
.0	.0	1.62137	2.41175	-71.1529
-14.4804	.0	.0	.0	.0
.0	.0	.0	.0	.0
.0	-.386813	.0	.0	280.539
-121.616	603103.	-80650.8	.0	.0
.0	.0	.0	.0	.0
.0	.0	.0	2584.08	.0
.0	36.6822	48.6965	-49982.4	101006.
.0	.0	.0	.0	.0
.0	.0	.0	.0	.0
-518.957	.0	.0	.0	.0
.0	.0	3.44524	6.74680	1.40106
-.136094D-01	268.438	33.9665	-31.8052	-5.19222
.221337D-01	.547969D-01	.0	261.645	8.16080
.0	.0	.0	.0	-6.74680
3.44524	.136094D-01	1.40106	-33.9665	268.438
5.19222	-31.8052	.547969D-01	-.221337D-01	.0
8.16080	-261.645	.0	.0	.0
.0	1.62137	-.136094D-01	2.41175	11.3237
-71.1529	-212.679	-14.4804	40.9471	.195906
.147067D-01	.0	-73.6610	211.864	.0
.0	.0	.0	.136094D-01	1.62137
-11.3237	2.41175	212.679	-71.1529	-40.9471
-14.4804	.147067D-01	-.195906	.0	211.864
73.6610	.0	.0	.0	.0
280.539	33.9665	-121.616	-212.679	603103.
980771.	-80650.8	-132.618	84.7249	-154.845
.0	540907.	-.111417D+07	.0	.0
.0	.0	-33.9665	280.539	212.679
-121.616	-980771.	603103.	132.618	-80650.8
-154.845	-84.7249	.0	-.111417D+07	-540907.
.0	.0	.0	.0	36.6822
-5.19222	48.6965	40.9471	-49982.4	-132.618
101006.	983657.	-44.5914	33.9177	.0
-117905.	10154.6	.0	.0	.0
.0	5.19222	36.6822	-40.9471	48.6965
132.618	-49982.4	-983657.	101006.	33.9177
44.5914	.0	10154.6	117905.	.0
.0	.0	.0	-1.63738	.212816
-.423867	.154362	1588.63	-399.786	-88.5144
19.0341	.531518	-.267172	.0	1100.99
328.002	.0	.0	.0	.0
.212816	1.63738	.154362	.423867	-399.786
-1588.63	19.0341	88.5144	.267172	.531518
.0	-328.002	1100.99	-2.05853	-3.50275
10337.5	-339.039	.0	.0	.0
.0	.0	.0	.0	.0
.0	.0	49.4180	.0	.0
.0	.0	.0	.0	547.568
-139.377	-308.591	-384.608	.148565D+07	.193681D+07
-43258.5	17771.1	183.720	-310.191	.0
.136682D+07	-.229132D+07	.0	.0	.0
.0	-139.377	-547.568	-384.608	308.591
.193681D+07	-.148565D+07	17771.1	43258.5	310.191
183.720	.0	.229132D+07	.136682D+07	.0
.124859	-.251860D-03	.628595	-.960889D-01	.0
.0	.0	.0	.0	.0
.0	.0	.0	.0	-.942375D-01

DAMPING MATRIX (17x17)



.0	.0	-.251860D-03	.209560	-3.93592
.757781	.0	.0	.0	.0
.0	.0	.0	.0	.0
.0	.385765D-02	.0	.0	.628595
-3.93592	18150.5	-2.45428	.0	.0
.0	.0	.0	.0	.0
.0	.0	.0	86.1467	.0
.0	-.960889D-01	.757781	-2.45428	18203.9
.0	.0	.0	.0	.0
.0	.0	.0	.0	.0
.0	.0	.0	.0	.0
.0	.0	.124859	.0	-.251860D-03
.0	.628595	.0	-.960889D-01	.0
-.194931D-01	.400246D-02	.0	-.802058	-.181437D-01
.0	.0	.0	.0	.0
.124859	.0	-.251860D-03	.0	.628595
.0	-.960889D-01	.400246D-02	.194931D-01	.0
-.181437D-01	.802058	.0	.0	.0
.0	-.251860D-03	.0	.209560	.0
-3.93592	.0	.757781	.0	.116169
-.455219D-02	.0	-.388923	.363098	.0
.0	.0	.0	.0	-.251860D-03
.0	.209560	.0	-3.93592	.0
.757781	-.455219D-02	-.116169	.0	.363098
3.88923	.0	.0	.0	.0
.628595	.0	-3.93592	.0	18150.5
.0	-2.45428	.0	.0	-5.27690
.0	19461.1	-1868.37	.0	.0
.0	.0	.0	.628595	.0
-3.93592	.0	18150.5	.0	-2.45428
-5.27690	.0	.0	-1868.37	-19461.1
.0	.0	.0	.0	-.960889D-01
.0	.757781	.0	-2.45428	.0
18203.9	.0	-86.0494	8.86324	.0
-3.07447	-1115.49	.0	.0	.0
.0	.0	-.960889D-01	.0	.757781
.0	-2.45428	.0	18203.9	8.86324
86.0494	.0	-1115.49	3.07447	.0
.0	.0	.0	-.389862D-01	.800491D-02
.232338	-.910438D-02	.0	-10.5538	-172.099
17.7265	2.64153	.0	.0	.0
21.1076	.0	.0	.0	.0
.800491D-02	.389862D-01	-.910438D-02	-.232338	-10.5538
.0	17.7265	172.099	.0	2.64153
.0	-21.1076	.0	-.376950	.154306D-01
344.587	.0	.0	.0	.0
.0	.0	.0	.0	.0
.0	.0	2.64153	.0	.0
.0	.0	.0	.0	-1.60412
-.362875D-01	-7.77846	.726197	38922.2	-3736.74
-6.14894	-2230.99	.0	-21.1076	.0
42429.5	.0	.0	.0	.0
.0	-.362875D-01	1.60412	.726197	7.77846
-3736.74	-38922.2	-2230.99	6.14894	21.1076
.0	.0	.0	42429.5	.0

MASS MATRIX (17X17)



## APPENDIX J. CHECK CASES FOR EXTERNAL PROGRAMS

This Appendix includes a summary of check cases (16) for the external programs: G400/F389 (8), RIEVA (2), E927 (1), Base Program Plot Package (1), APT/PLOT (3), and WABAT (1). They are listed in Table L1 which provides a brief description of each case.

TABLE L1. CHECK CASES FOR EXTERNAL PROGRAMS

External Program	Case Number	Case Description
G400/F389	1	G400 alone operation - baseline check case
G400/F389	2	G400 alone operation - blade-mounted pendulums option
G400/F389	3	G400 alone operation - higher harmonic control (HHC) and rotor impedance options
G400/F389	4	G400 alone operation - teetering rotor and rotor impedance options
G400/F389	5	F389 alone operation - field point induced velocity solution option - induced velocities output for RIEVA program
G400/F389	6	F389 alone operation - standard circulation solution option - induced velocities output for G400 program
G400/F389	7	Coupled G400/F389 program operation - 1 cycle option - uses ARES model data and calculates rotor trim, HHC and rotor impedances
G400/F389	8	Coupled G400/F389 program operation - 2 cycles option
RIEVA	1	Operation with far wake variable induced velocity field from F389 program
RIEVA	2	Operation with far wake uniform induced velocity field
E927	1	Aeroelastic rotor in hover with 4 rotor degrees of freedom (12 rotor modes) and 5 hub degrees of freedom (see Ref. 1, Table 13, Case 12)
Base Program Plot Package	1	Output file from Ref. 1, Table 13, Case 11 - isolator model
APT/PLOT	1	Airframe buildup demonstration - nose cone + cylinder + reversed nose cone
APT/PLOT	2	Verification of panel geometry for a typical airframe
APT/PLOT	3	Graphical representation of airframe flow field (uses WABAT results as input)
WABAT	1	Typical input employing APT/PLOT file output - calculates harmonics of fuselage inflow at rotor

#### REFERENCE

1. Cassarino, S; and Sopher, R: Coupled Rotor/Airframe Vibration Analysis Program Manual - Volume I - User's and Programmer's Instructions. NASA CR-165891, June 1982.

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16. Abstract  This report provides sample input and output listings obtained with the Base Program (SIMVIB) of the Coupled Rotor/Airframe Vibration Analysis and the external programs, G400/F389 and E927. Results for five Base Program test cases are shown in Appendices A through E. They represent different applications of the SIMVIB program to study the vibration characteristics of various dynamic configurations. Input and output listings obtained for one cycle of the G400/F389 coupled program are presented in Appendices F and G respectively. Similarly, results from the rotor aeroelastic analysis E927 appear in Appendices H and I. Finally, a summary of the check cases for all the external programs interacting with SIMVIB program is illustrated in Appendix J.					
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